A

SYSTEM

OF

SURGERY:

BY

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In Vol. VII.

A TREATISE ON THE THEORY AND PRACTICE OF SURGERY.

CHAPTER XI.

Of the Diſeaſes of the EYES.

SECTION I.

Anatomical Deſcription of the EYE.

THE object of this chapter is the chirurgical treatment of the diſeaſes of the eye and parts immediately connected with it: Hence it will comprehend the conſideration of thoſe affections to which the lachrymal paſſages are liable. But be-

fore proceeding farther, it will be proper to premiſe an anatomical deſcription of the parts in which theſe diſeaſes are ſeated.

Minuteneſs on this ſubject would lead to a greater length than the extent of this work will admit, nor does it appear to be neceſſary: I ſhall therefore give only ſuch a general deſcription as the nature of the diſeaſes, and the operations to be deſcribed, ſeem to require.

The eyes, and part of their appendages, are placed in two bony cavities, termed the Orbits, formed by a conjunction of the inferior part of the frontal bone with ſeveral other bones of the head and face; namely, with the oſſa maxillaria, oſſa malarum, oſſa unguis, os ethmoides, os ſphenoides, and oſſa palati. All the upper part of the orbits is formed by the orbitar proceſſes of the frontal bone; and the ſame proceſſes form a conſiderable vacuity in each orbit towards the external canthus of the eye, in which the glandula lachrymalis is lodged. The inferior part of the orbits is formed by the oſſa maxillaria and oſſa malarum, which alſo form part of the ſides or

angles of each orbit; the former ſtretching towards the internal canthus, and the latter towards the external angle of the eye. The bottom or back part of each orbit is formed by the ethmoid, ſphenoid, and a ſmall portion of the palate bones; and a ſmall part of the internal corner or angle of each orbit is filled up by the os unguis.

As this laſt mentioned bone, the os unguis, is frequently the ſubject of a nice operation, it is more particularly neceſſary for ſurgeons to be well acquainted with its ſtructure and ſituation. A conſiderable part of it is ſo thin and brittle, that a perforation may be made in it with very little force; with leſs indeed than is commonly imagined; for not being thicker than fine paper, the point of a ſharp inſtrument is eaſily made to paſs through it. The internal ſurface of the os unguis, which in part covers the cells of the ethmoid bone, is ſomewhat rough; but its external ſurface is ſmooth, and conſiſts of two depreſſions or con-

cavities divided by a ridge. This ridge forms the boundary of the orbit at the internal canthus of the eye, and one of theſe depreſſions forms the very point or angle of the orbit; while the other concavity, which lies between this ridge and the naſal proceſs of the maxillary bone ſerves to lodge in its upper part, where it is largeſt, the lachrymal ſac, and below it protects the duct leading from this ſac into the noſe, where it terminates immediately below the ſuperior edge of the lower os ſpongioſum. The naſal duct of the lachrymal ſac admits a probe of the ſize of a crow's quill; and it continues of this diameter till within a little of its termination in the membrane of the noſe; where, by running in an oblique direction between the layers of this membrane, in a manner ſimilar to the termination of the ureters in the bladder, it is in general found contracted to a very narrow point.

The principal part of each orbit is filled by the Ball or Globe of the eye, a body compoſed of ſeveral membranes or coats,

coats, incloſing fluids or liquors of different conſiſtences, improperly termed the Humors of the eye.

Anatomiſts have conſidered the coats of the eye as numerous, but three only can be diſtinctly traced; namely, the Sclerotic, the Choroid, and the Retina. The former has indeed been ſuppoſed to conſiſt of different coats, to all of which names have been appropriated, *viz.* The tunica albuginea, the cornea opaca, cornea lucida, *&c.* and even the choroid has been ſuppoſed to be formed of different tunics: But although a tedious maceration may ſeparate ſome of theſe parts into different lamellæ, the knife of the anatomiſt is not able to do ſo; and as diſtinctions of this kind can tend to no uſeful purpoſe, they ought not to be retained.

The fat and different muſcles of the eye being ſeparated from it, the ſclerotic is the firſt coat that preſents itſelf; and it is found to ſurround the whole globe of the eye, which is not the caſe with any

of the others. In the anterior convex part of the eye, which in a healthy ſtate is always tranſparent, this membrane is in general termed the Cornea. The poſterior part of it is thick, ſtrong, and perfectly opake: It is this part of it that has commonly been termed the Sclerotic Coat, or, as I have already obſerved, the opake Cornea. But although the tranſparent cornea can be eaſily ſeparated into different layers, which cannot be ſo readily done with the other; a circumſtance which has led ſome anatomiſts to conſider them as diſtinct coats; yet as the one is evidently a continuation of the other, and as they are both ſupplied with the ſame blood-veſſels, there ſeems to be no good reaſon, as I have juſt remarked, for the diſtinction being retained.

All the opake part of the ſclerotic coat is lined with the ſecond coat of the eye, the choroides; a dark, or duſky red coloured membrane, which every where adheres to it with firmneſs, particularly at a ſmall diſtance behind the commence-

ment

ment of the tranſparent cornea, where a circular whitiſh ring is formed by this junction of the choroides with the ſclerotica, commonly termed the Ligamentum Ciliare. From this junction of the choroid with the ſclerotic coat, a perforated kind of curtain or ſeptum is produced, which from the variety of its colours is termed the Iris. The perforation in the centre of this membrane is termed the Pupil, and ſerves to admit the rays of light to the bottom of the eye.

Towards the middle of the iris, we perceive a number of radiated lines running from the circumference to the centre: Theſe are denominated the ciliary proceſſes, and on their action the contraction and dilatation of the pupil appears to depend; for it ſeems to be doubtful, whether any circular fibres exiſt in the iris or not.

Ruyſch, as well as other anatomiſts, have imagined, that the tunica choroides conſiſts of two diſtinct coats, and the iris

has been in general conſidered as a continuation of one of theſe; but later diſcoveries tend to ſhow that the choroides in the human eye conſiſts of one ſimple indiviſible tunic, and that it is different in every reſpect from the iris.

The third and moſt internal coat of the eye is the Retina, which ſeems to be an expanſion of the optic nerve. It does not line the whole cavity of the eye, but appears to terminate over the anterior edge of the ſac or capſule of the vitreous humour to be hereafter deſcribed.

Viſion we ſuppoſe to be produced by the rays of light being applied in a certain manner to the retina: It is therefore obvious, that a ſound ſtate of the optic nerve, by which this membrane is produced, is highly neceſſary for the purpoſes of viſion, and we conclude with much probability, that the nerve is ſound, when the uſual contraction and dilatation of the pupil take place on light being applied to, or removed from the eye: For in a healthy ſtate of this organ, ſuch a connection

connection ſubſiſts between the optic nerve and the iris, that the latter always contracts or dilates, juſt in proportion to the quantity of light thrown upon the other.

Theſe are the only proper coats or coverings of the eye; but there are two membranous expanſions which likewiſe cover a conſiderable portion of the back part of the globe, and which by many have been enumerated as part of its tunics; namely, the albuginea, and tunica conjunctiva: The former, however, is formed entirely of the tendinous attachments of the muſcles of the eye; and the latter is a continuation or reflection of the membrane that lines the internal ſurface of the eye-lids.

The cavity formed by theſe coats or membranes, is filled with three kinds of ſubſtances, or humours as they are commonly termed: Namely, the vitreous; the cryſtalline; and the aqueous. All the poſterior part of the eye is filled with the vitreous humour, which is perfectly tranſparent,

tranſparent, and of a gelatinous conſiſtence: This humour is completely ſurrounded by a very delicate membrane, which likewiſe appears to paſs through the ſubſtance of this gelatinous maſs, and to confine it in a kind of cellular texture or net-work. In the anterior ſurface of the vitreous humour, we find a depreſſion exactly oppoſite to the pupil, for the purpoſe of receiving the cryſtalline humour, a ſubſtance of a much firmer texture than itſelf, and of a rounded or lenticular ſhape. This body, or the Lens as it is commonly termed, is retained in its ſituation by a very fine membrane or capſule, which appears to be formed by the capſule of the vitreous humour, ſeparating or dividing at this part into two diſtinct laminæ. It has indeed been ſuppoſed, that the cryſtalline lens has a cyſt or capſule peculiar to itſelf; but I have never been able to diſtinguiſh it, nor has any ſufficient evidence ever been given of it.

The

The whole anterior part of the eye, from the termination of the vitreous and cryſtalline humours, to the internal ſurface of the tranſparent cornea, is filled with the aqueous humour, a thin tranſparent fluid. By the iris, already deſcribed, this part of the eye is divided into two unequal departments: The ſmalleſt of theſe, which is ſcarcely a tenth of an inch in width, and lies between the iris and the capſule of the vitreous humour, is termed the Poſterior Chamber; and the other, which is conſiderably larger, and occupies the whole ſpace from the iris to the cornea, is called the Anterior Chamber of the eye. Although theſe two diviſions of the eye, however, are perfectly diſtinct, it is obvious that they muſt communicate at the pupil, the opening in the centre of the iris.

The muſcles of the eye are ſix in number; namely, the levator oculi, the depreſſor, adductor and abductor, the obliquus ſuperior and inferior. By theſe all the motions of the eye are performed.—

The

The firſt five ariſe from near the bottom of the orbit, at no great diſtance from each other; and the laſt originate from the orbitar proceſs of the maxillary bone near to its junction with the os unguis. They are all inſerted into the tunica ſclerotica, below the adnata or tunica conjunctiva.

The conſtant motion of the eye requiring it to be kept ſoft and moiſt, it is for this purpoſe plentifully ſupplied by a fine tranſparent fluid, the tears. This ſecretion is now known to depend in a great meaſure upon a large glandular body, the glandula lachrymalis, ſeated immediately above the eye, in that depreſſion we formerly mentioned in the os frontis, near to the external angle of the orbit. There is likewiſe in the internal or great angle of the eye, a ſmall red coloured body, termed the Caruncula Lachrymalis, which till of late was ſuppoſed to be the principal origin of the tears. This, however, is not the caſe; and there is even

even reaſon to doubt whether this ſubſtance is of a glandular nature or not.

But although the tears are chiefly ſecreted by the glandula lachrymalis, there is much reaſon to imagine that they are partly produced by exſudations from the whole ſurface of the eye, as well as from the membrane of the eye-lids. But this being in ſome meaſure foreign to our ſubject, I ſhall not at preſent conſider it farther.

The eye, and its appendages, that have juſt been deſcribed, are ſupplied by ſeveral arterial branches, either directly from the internal carotid, or from the maxillary arteries. None of theſe, however, are of any conſiderable ſize; at leaſt, before reaching the eye, they are in general found divided into branches of no great magnitude; a circumſtance of ſome importance for practitioners to recollect: For, on the ſuppoſition of theſe arteries being larger than they are, ſurgeons have commonly been deterred from operating with that freedom on the eye which they otherwiſe

otherwiſe might do, particularly in the total removal or extraction of the eye-ball; an operation to be hereafter deſcribed. The veins of the eye terminate partly in the external, and partly in the internal jugular veins.

Viſion, as I have already obſerved, depends in a great meaſure on the optic nerve which paſſes in from the brain at the bottom of the orbit; but the eye does not depend entirely upon this nerve: It receives branches from ſeveral others, particularly from the fourth, fifth, and ſixth pairs.

The globe of the eye, and other parts contained in the orbit, are covered by two very moveable membranes, called Palpebræ, or Eye-lids, formed chiefly of the ſkin and a ſmooth fine membrane already deſcribed, the tunica conjunctiva, with an intermediate thin cartilaginous body termed Tarſus, on which the cilia or eye-laſhes are placed. Both the upper and under eye-lids are ſupplied with this thin cartilage; at the extreme bor-

der

ter of which, towards the roots of the cilia, a number of ſmall follicles are placed, named after their diſcoverer, the follicles or glands of Meibomius; from whence is poured out a viſcid ſebaceous matter, commonly termed the gum of the eyes.

The motion of the eye-lids is performed entirely by two muſcles, the orbicularis palpebrarum, and the levator palpebræ ſuperioris. The former is common to both the eye-lids: It originates by a ſmall tendon at the inner angle of the eye, and by fine fleſhy fibres from the orbitar proceſs of the maxillary bone, and is inſerted by a ſmall round tendon into the naſal proceſs of the ſame bone. A few of the tendinous fibres of this muſcle are ſpread upon, and ſeem to be inſerted into, the anterior ſurface of the lachrymal ſac. The uſe of this muſcle is to draw the eye-lids together, and to compreſs the eye-ball.

The levator palpebræ ſuperioris originates from the bottom of the orbit, and

is

is inſerted into the membranous and cartilaginous parts of the upper eye-lid: The ſole uſe of it ſeems to be to raiſe this covering of the eye.

I have already deſcribed the lachrymal ſac and duct, by which the tears are conveyed to the noſe: We have now to attend to the manner in which they paſs from the eyes to the ſac. After the tears have moiſtened the eyes, they would at all times be falling over the cheeks, if not carried off in ſome other manner: A very beautiful mechaniſm, however, is employed by nature for this purpoſe.

Near to the internal angle of each eye, we perceive two ſmall points or protuberances, one on the border or edge of the upper eye-lid, and the other exactly oppoſite to it on the under eye-lid. In the centre of each of theſe there is a ſmall hole or opening, termed the Punctum Lachrymale, which we find to be the mouth of a ſmall conduit leading to the lachrymal ſac, and by which the tears are conveyed to it. Theſe canals are of

ſuch a ſize as to admit a probe ſomewhat larger than a hog's briſtle. They are each about four-tenths of an inch in length; and after running in an obique direction along the edge of the eye-lids, they commonly join into one common trunk immediately before they enter the lachrymal ſac, ſomewhat more than the tenth of an inch below the upper end of it.

The protuberances on which theſe canals originate, are evidently irritable, as may readily be ſeen on their being touched with a probe or any acrid application. This renders it probable that they are endowed with a power of abſorbing the tears; and this fluid we find is at all times applied to the mouths of them, by a kind of membranous production of the tunica conjunctiva, of a ſemilunar form, lying in the internal angle of the eye. This membrane is by anatomiſts termed Valvula Semilunaris. In order, however, to render the anatomy of theſe parts as intelligible as poſſible, a cir-

cumſtance of much importance in the treatment of the diſeaſes to which they are liable, I have thought it right to give a delineation of them in Plate XII. fig. 1.

Being now prepared to enter upon the conſideration of the diſeaſes of theſe parts, I ſhall proceed accordingly to this part of our ſubject.

Inflammation of the eye frequently occurs, and is productive of many other diſeaſes to which this organ is liable: I ſhall therefore enter firſt on the conſideration of this ſymptom, and ſhall afterwards treat of the following affections and operations peculiar to theſe parts. Wounds of the eye-lids, and eye-balls;—Tumors of the eye-lids, ſuch as abſceſſes, melicerous and ſteatomatous collections and warts—Inverſion of the cilia or eye-laſhes—Everſion of the eye-lids—Concretion of the eye-lids—Fleſhy excreſcences on the cornea—Abſceſſes in the globe of the eye—Dropſical ſwellings of the eye-ball—Blood effuſed in one or both of the chambers

chambers of the eye—Ulcers on the cornea—Specks or films on the tranſparent part of the eye.—Protruſion of the globe of the eye from the ſocket—Cancerous affections of the eye, and extirpation of the eye-ball—Of artificial eyes—Of cataracts, and the treatment of them by depreſſion and extraction—Obliteration of the pupil, by concretion of its ſides and adheſion of the iris to the capſule of the cryſtalline and vitreous humours.—And, laſtly, of the fiſtula lachrymalis.

SECTION II.

Of Ophthalmia, or Inflammation of the Eyes.

THE eyes and their appendages, like every organiſed part of the body, are liable to inflammation; and the ſymptoms which it excites vary according to the particular ſeat of the diſeaſe. Thus the ſymptoms ariſing from inflammation of the retina and other deep-ſeated parts, are different from thoſe which attend inflammation of the external coverings of the eye; and theſe again are different from thoſe produced by an inflamed ſtate of the eye-lids.

The moſt frequent ſymptoms attending inflammation of the eye-ball, are, a preternatural redneſs of the adnata, owing to a turgeſcent ſtate of the blood-veſſels; pain and heat over the whole ſurface of the eye, attended with a ſenſation of motes or extraneous bodies rubbing upon the

the eye-ball, and in moſt inſtances a plentiful effuſion of tears. All theſe ſymptoms are increaſed by motion of the eye or of its coverings, and likewiſe by expoſure to light. We judge too of the depth of the inflammation by the degree of pain induced by expoſure to light. When the pain produced by light is conſiderable, there is always cauſe to imagine that the parts at the bottom of the eye, and eſpecially the retina, are chiefly affected; and again, when no pain is excited by expoſure to light, we conclude with much probability that the inflammation is confined entirely to the external parts of the eye. In ſuperficial affections too, the ſymptoms are in general local; but whenever the inflammation is deep-ſeated, ſevere ſhooting pains are frequently felt through the head, and fever very commonly prevails.

During the whole courſe of the inflammation, there is for the moſt part a plentiful flow of tears, and they frequently become ſo hot and acrid as to excoriate

the neighbouring parts; but it often happens that, together with the tears, a conſiderable quantity of yellow purulent-like matter is diſcharged: And, when the inflammation has either ſpread to the eye-lids, or has been ſeated there from the beginning, as ſoon as the tarſi become affected, a diſcharge takes place of a viſcid glutinous kind of matter; which adds greatly to the patient's diſtreſs, as it tends to increaſe the inflammation, by cementing the eye-lids ſo firmly together, as to render it difficult, particularly in the mornings, to open them.

Theſe are the appearances of inflamed eyes in the firſt ſtages of the diſeaſe; but when of long duration, it proceeds, like inflammatory affections of other parts, to terminate either in ſuppuration, or in the effuſion of a fluid not convertible into pus. Inflammation of the eyes has alſo been known to terminate in mortification; but this is a rare occurrence; and we even know that it does not readily end in ſuppuration.

Inflammation of the eyes is induced by various cauſes: Whatever tends to produce inflammation in other parts, will be attended with ſimilar effects, when applied to the eye; but the peculiar mechaniſm of this organ renders it liable to be acted on by cauſes which may with impunity be applied to other parts of the body. Thus, much expoſure to ſmoke tends often to induce inflammation of the eyes: And it alſo happens from the application of much light; particularly from much expoſure to the rays of the ſun; to the influence of a large fire; or to the effects of ſnow: And the introduction of lime, ſand, or any other extraneous body, between the eye-lids and the eye, is very univerſally attended with this effect.

The conſequences, however, of theſe cauſes are not in general permanent; for in recent caſes, a removal of the cauſe is in moſt inſtances attended with the cure of the diſeaſe. It is that variety of inflammation that originates from diſeaſe of the ſyſtem that proves moſt obſtinate, and

which is therefore moſt to be dreaded, particularly that which occurs from ſcrophula and lues venerea; for we find by experience, that few ſymptoms in either of theſe diſeaſes proves ever ſo tedious as thoſe inflammatory affections of the eyes with which they are often attended. Whilſt a venereal or ſcrophulous affection ſubſiſts, it is in vain to expect a cure of any inflammation that may exiſt. Such remedies ought therefore to be employed, as are known to prove moſt powerful for the removal of the diſeaſe of the ſyſtem, at the ſame time that we attend to the local treatment of the eyes. It is the management of this local affection that we are now to conſider.

In the treatment of inflamed eyes, the indications to be kept in view are, to remove any extraneous ſubſtances that might tend to excite irritation. To diminiſh pain and irritability already induced—To remove the turgeſcence of the blood-veſſels of the eyes—And to prevent a return of the diſeaſe.

When

When inflammation is induced by ſand, or any other extraneous body acting on the eye, nothing will prove effectual, till the cauſe of irritation is removed. With the pains, the eye-lids may be ſo far ſeparated with the fingers alone, as to admit of a clear view being obtained of a conſiderable portion of the eye-ball. But this will be done more effectually, if an aſſiſtant, either with his fingers alone, or by means of a flat curved hook, ſuch as is repreſented in Plate XIII. fig. 6. raiſes the upper eye-lid, while the ſurgeon himſelf depreſſes the other. Any extraneous body diſcovered in this manner, may be taken out with the end of a blunt probe, covered with a bit of ſoft linen or ſilk; or if any ſharp-pointed ſubſtance is fixed in the eye, it will be moſt eaſily removed with ſmall forceps.

It often happens, however, even when we are certain, from the feelings of the patient, as well as from other circumſtances, that the inflammation is kept up by ſome cauſe of this kind, that nothing is diſcovered on inſpection. In ſuch circumſtances

cumſtances ſome advantage is often de-
rived from injecting tepid water, or milk
and water, between the eye-lids and eyes,
by which ſand and duſt are often waſhed
out, when they cannot be removed in
any other manner: The eaſieſt and moſt
effectual method of throwing in theſe li-
quids, is by means of a bag of elaſtic
gum, fitted with a ſhort ivory pipe.
With this bag, a ſurgeon can eaſily per-
form all that is neceſſary without aſſiſt-
ance, which with a common ſyringe he
cannot ſo readily do. One of theſe bags,
properly mounted, is repreſented in Plate
XIII. fig. 3.

In this manner, and by bathing the eyes
frequently in warm water, they may in
general be entirely cleared of all extrane-
ous bodies: But when the inflammation
has ſubſiſted for ſome time, it often con-
tinues after the cauſe by which it was
produced is removed; in which event,
other remedies muſt be employed. When
the pain is conſiderable, and the pulſe
quick, full, or hard, it becomes neceſſary
to

adviſe blood-letting in proportion to the ſtrength of the patient. The bowels ſhould be kept open with briſk purgatives; a low diet ſhould be continued for a length of time, proportioned to the violence of the diſeaſe; the body ſhould be kept cool; light ſhould be excluded from the eyes, and they ſhould be kept conſtantly covered either with ſoft linen ſoaked in a weak ſaturnine ſolution, or with cataplaſms applied cold, compoſed of this ſolution and crumb of bread. In this manner very ſevere degrees of inflammation are often removed; but caſes frequently occur which reſiſt theſe, and all the remedies uſually employed.

In ſuch inſtances, we find, that diſcharging blood from the contiguous parts, or even from the blood-veſſels of the eye itſelf, proves ſometimes uſeful, when every other means have failed. When a large quantity of blood is to be diſcharged, it is done with moſt advantage from the jugular veins or temporal arteries; even the laſt of which, as I have already endeavoured to ſhow, may be opened with en-

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tire ſafety *. In adviſing local blood-letting, we do it either from the parts contiguous to the eyes, or from the veſſels of the eyes themſelves; and the means we employ for it are, cupping and ſcarifying the temples, leeches applied as near as poſſible to the eyes, and ſcarifying the blood-veſſels of the eye-ball or eye-lids. The operation of cupping and ſcarifying, and likewiſe the method of applying leeches, have been already deſcribed †.

In a great proportion of caſes, an early and a plentiful diſcharge of blood from the temporal artery or jugular vein proves ſucceſsful; but where ophthalmia is either deep ſeated, or of long duration, I have commonly found that little advantage is derived from our taking blood in this manner, and that no remedy proves ſo ſucceſsful as a free diſcharge of blood from the veſſels of the inflamed eye. As this operation, however, the diviſion of the blood-veſſels of the eye, has always been conſidered as nice and hazardous, it has

* Vide Chapter VIII. Sect. 8.

† Vide Vol. IV. Chap. VIII.

has ſeldom been practiſed; but any ſurgeon with a ſteady hand may perform it with ſafety, and without injuring the eye itſelf.

Various methods have been propoſed for dividing the veſſels of inflamed eyes. It has been attempted with a bruſh compoſed of the beards of barley; by drawing the ſharp ſpiculæ acroſs the part to be ſcarified, a number of veſſels are thus penetrated and divided. This was firſt put in practice by an Engliſh Oculiſt, Mr Woolhouſe, about the beginning of this century, and it was conſidered as an improvement on the means which till then had been in uſe for the ſame purpoſe, from the days of Hippocrates and Celſus; which were, rubbing the parts to be ſcarified either with a piece of rough pumice-ſtone, or with the ſpiculæ of thiſtles, till the blood-veſſels were ſufficiently lacerated for diſcharging as much blood as was neceſſary. It has likewiſe been propoſed to raiſe or elevate the veſſels to be divided with

with the point of a needle, and then with ſciſſars or a ſcalpel, to cut them acroſs.

All theſe modes, however, of ſcarifying the eye, proceed from timidity; they give much unneceſſary pain, and they do not prove ſo effectual as ſcarifications made with a ſharp cutting inſtrument. Practitioners have commonly been afraid of attempting this operation with an inſtrument of this kind; but any perſon accuſtomed to chirurgical practice, will find that it may be done both with eaſe and ſafety. In the hands of a ſteady ſurgeon, it may be done with the ſhoulder of a common lancet. But with a view to prevent the eye-lids being injured by one edge of the inſtrument, while the other is employed in ſcarifying the eye, I have delineated a ſmall knife in Plate XII. fig 4. and another in Plate XXIII. fig. 5. with either of which the operation may be done with ſafety.

In this operation only two aſſiſtants are requiſite, one to ſtand behind the patient, to ſupport his head, and the other to ſecure

re his hands. This being done, the rgeon, ſtanding or ſitting before the pa-ent, with the fore and middle finger of ne hand, ſhould ſeparate the eye-lids, as to expoſe as much of the eye-ball as ſſible; whilſt, with the inſtruments I ve mentioned in the other, he is to di-de all the large turgid veſſels. This moſt effectually done by paſſing the oint of the inſtrument below the veſ-ls to be divided, and thus cutting from elow upwards. In general, we wiſh to void the tranſparent cornea in this ope-ation, and to confine the ſcarifications the albuginea or cornea opaca; but hen the veſſels of this part of the eye re much diſtended, they may be divided ith perfect eaſe and ſafety. I have of-en found it neceſſary, to divide the veſ-els of this part of the eye, and no incon-enience ever enſued from it.

On the inflamed blood-veſſels being di-ided, we ſhould endeavour to promote a liſcharge of their contents; for which urpoſe nothing anſwers ſo well as bath-

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ing the eye in warm water, either by means of an eye-cup, or with pieces of ſoft old linen, frequently immerſed in the water.

A plentiful diſcharge of blood from the veſſels of the eye often gives more relief in the pain ariſing from ophthalmia, than all the other remedies we employ. But when it either does not ſucceed, or when not agreed to by the patient, opiates applied to the eye frequently anſwer. A few drops of a ſtrong ſolution of opium in water being dropped into the eye proves ſometimes ſucceſsful; but the common laudanum of the diſpenſatories, particularly when wine is employed as the menſtruum, proves often effectual when the watery ſolution of opium has been uſed in vain.

The pain ariſing from ophthalmia, as well as every other ſymptom of the diſeaſe, is frequently relieved by ſhaving the head, and waſhing it from time to time in cold water. Bliſters applied behind the ears, on the neck and temples, are in

me inſtances uſed with advantage; alſo rains, formed either by pea-iſſues, or a cord in the nape of the neck.

In ſome ſtages of the diſeaſe, much diſtreſs is experienced from a thick viſcid ſecretion, that glues the eye-lids cloſely together. This takes place in ſome degree in almoſt every caſe of ophthalmia, particularly in the mornings, and when the tarſi or extreme borders of the eye-lids are much inflamed. In this caſe, indeed, the inflammation ſoon terminates in a number of ſmall ulcerations, which very commonly with the aſſiſtance of a magnifier, and ſometimes with the naked eye alone, may be diſtinctly obſerved round the whole circumference of the cartilaginous border of the eye-lids.—From theſe this glutinous matter, that in ſome meaſure is produced by the ſebaceous glands of theſe parts, is poured out in great quantities; and unleſs ſome means are employed for curing the ulcers, ſcarcely any remedy will remove the inflammation of the eyes.

A ſmall portion of any emollient ointment, being from time to time inſerted between the eye-lids, proves often uſeful in preventing this viſcid matter from fixing them together; but the relief obtained in this manner proves only temporary. Some addition muſt be made to the emollient for the purpoſe of healing the ulcers from whence the matter is diſcharged, otherwiſe no permanent advantage enſues from it; and when the diſeaſe is local, and not connected with ſcrophula or any other affection of the conſtitution, the cure of the ulcers will commonly be followed by the cure of the inflammation by which they were produced. With this view, the calx of zinc, or lapis calaminaris finely levigated, may be added to an equal quantity of an emollient ointment compoſed of wax and oil; but no application proves ſo generally uſeful as ointments of the mercurial kind; and perhaps the beſt of theſe is the unguentum citrinum of the Edinburgh Diſpenſatory, mixed with an equal quantity

quantity of hog's lard; or the blue mercurial ointment of different diſpenſatories, prepared with quickſilver and lard. One ounce of quickſilver, triturated with four ounces of lard, is for this purpoſe a very uſeful application. Every night and morning the ulceration on the eye-lids ſhould be covered with a little of this, at the ſame time that a ſmall portion of the ointment ſhould be inſerted between the upper and under eye-lids, while a weak ſaturnine or vitriolic ſolution ſhould be employed once or twice daily, as a waſh.

It is almoſt unneceſſary to remark, that no light ſhould be admitted to the eyes, not merely during the continuance of the inflammation, but as long as it excites pain: Even when one eye only is affected, care ſhould be taken to keep them both covered; for we know from obſervation, that the expoſure even of a ſound eye to light, while the other is inflamed, almoſt conſtantly proves hurtful to both.

The eyes, however, ſhould never be kept cloſely tied down: By keeping them

too warm, it very commonly does harm: They ſhould be very lightly covered with a looſe bandage either of ſilk or ſoft linen; and when the patient is able to go abroad before his eyes can bear a free light, the bandage in Plate XIII. fig. 1. frequently proves uſeful: By means of it the quantity of light admitted to the eyes is eaſily regulated, whilſt at the ſame time the eyes themſelves are neither compreſſed nor kept too warm.

By due perſeverance in ſuch a courſe as I have mentioned, local inflammation of the eyes is in moſt inſtances removed; but where it proceeds from a general affection, ſuch as ſcrophula or lues venerea, no remedy will prove ſucceſsful, till the diſeaſe of the ſyſtem is removed.

With a view to prevent theſe frequent returns of ophthalmia to which many are liable, various remedies have been recommended, particularly aſtringent lotions. They ſeldom, however, anſwer any good purpoſe; and when too ſtrong, they are very apt to do miſchief. During

ing the continuance of inflammation, we often derive advantage from bathing the yes with a weak ſolution of ſugar of ead, or white vitriol; but they have no ffect in preventing a return of inflammation. For this purpoſe, nothing I have employed proves ſo certainly uſeful as old bathing. By keeping the head ſhaved, and immerſing it daily in cold water, much may be done in preventing thoſe frequent returns of inflamed eyes, to which many are liable. For the purpoſe of applying local bathing to the eyes, different means are employed; but the moſt ſimple and moſt effectual is by means of a cup, repreſented in Plate XIII. fig. 2. By filling this cup, which ſhould be of an oval form, and ſomewhat larger than the eye, with water, or any other liquid, and applying it to the eye, if in this ſituation the eye-lids are opened and moved about, the whole ſurface of the eye will be thus effectually bathed. As a preventative of ophthalmia, a liberal uſe of Jeſuits bark has alſo proved uſeful; and

we know from experience, that in periodical returns of the diſeaſe, it is almoſt the only remedy to be truſted. I need ſcarcely obſerve, too, when any cauſe is diſcovered by which inflammation appears to be excited, that it ought to be avoided; for if this precaution is neglected, no remedy will prove effectual.

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SECTION III.

Of Wounds of the Eye-lids and Eye-ball.

AS the management of wounds has already been treated of in Chapter II. it may be conſidered as rather out of place to enter upon any part of the ſubject here; but I judged it proper to reſerve for this place a more particular conſideration of wounds of the eye-lids and eye-ball.

In wounds of the eye-lids, the parts may be divided either in a longitudinal or tranſverſe direction with reſpect to the courſe of their muſcular fibres. If the ſkin only is divided, or, if a wound penetrating the whole ſubſtance of the eye-lid, is inflicted in ſuch a manner as merely to ſeparate the fibres of the orbicularis muſcle from one another, all that we have to do is to draw the ſkin and other

divided parts exactly together, and to retain them in this ſituation with ſlips of adheſive plaſter. As in ſuch circumſtances no retraction can take place of the divided parts, they are eaſily retained; and care ſhould be taken that they are kept in this ſituation till they are firmly united.

But when the orbicularis muſcle is divided in a tranſverſe direction, and eſpecially when a correſponding part of the tarſus or cartilaginous border of the eye-lid is likewiſe divided, more attention is required: If they are allowed to ſeparate much from each other, ſuch a want of tone in the eye-lid is apt to take place, as prevents it from performing its uſual motions with facility: And again, if the divided parts are drawn too tightly together, they impede the motion of the eye.

In tranſverſe wounds of the eye-lids, it is ſometimes neceſſary to employ ſutures. The interrupted ſuture is uſually adviſed; but the twiſted ſuture anſwers better.

etter. The method of performing theſe
itures having been deſcribed in Chap. VI.
I have at preſent only to remark, that
n the practice of either of them upon
ne eye-lids, much nicety and delicacy
required, otherwiſe much harm may be
one, not only to the eye-lids, but to the
ye-ball itſelf. When the twiſted ſuture
employed, the pins ſhould be ſhort and
nall, ſo as to run as little riſk as poſſible
f hurting the contiguous parts, and they
ould be made to paſs not only through
ne ſkin, but into the fibres of the orbi-
ularis muſcle, otherwiſe little advantage
ill be gained by the operation: But they
ould not be carried entirely through
ne inner membrane of the eye-lid. This
ould irritate and inflame the eye; and
ot being neceſſary, it ought to be a-
oided. If the ſkin is properly retained
n its ſituation, with a few of the fibres of
he muſcle underneath, a better cure will
e obtained than if the needles were made
o paſs through the whole ſubſtance of the
ye-lid; for in this manner the action of

the

the muſcle is preſerved, whilſt no riſk is incurred of the eye-lid being too much contracted; a circumſtance very apt to occur when the whole thickneſs of the eye-lid is penetrated by the ſutures.

It is almoſt unneceſſary to obſerve, that in order to inſure ſucceſs from this operation, the motion of both eyes ſhould be as much as poſſible prevented, otherwiſe no union of the divided parts will be obtained. The eye will be irritated; inflammation will occur; and this will render it neceſſary to remove the ſutures before they have effected the purpoſe for which they were employed.

On the ſutures being finiſhed, the eye-lids ſhould be cloſed and covered with a pledgit of lint or ſoft linen ſpread with ſaturnine cerate, that the parts may be kept as eaſy as poſſible; and a compreſs of lint being laid over it, and another over the ſound eye, the whole ſhould be retained by a napkin over the head, tied in ſuch a manner as to preſs equally and gently upon both eyes. Inflammation

ſhould

ould be ſtrictly guarded againſt; or if has already taken place, we muſt endeavour to remove it by the means pointed ut in the laſt ſection: And in the courſe f three days from the ſutures being introduced, they ſhould all be removed; or in this period, if the parts have been ept in contact, their union will be accomliſhed.

We have hitherto been ſuppoſing that ne parts are only ſimply divided; and hen replaced, that the eye is found to be s completely covered as before: But it ometimes happens, that they are not only ivided but deſtroyed; in which caſe, when ſuch a portion of the eye-lids is emoved, as to prevent the parts that remain from being brought into contact without impeding the motion of the eye, t will be more prudent to leave them at ome diſtance from each other; and by treating them with light dreſſings, to truſt to nature for ſupplying the deficiency by a new production of cellular ſubſtance.

The mechaniſm of the eye-lids is peculiarly adapted for the protection of the parts

parts beneath from too free an admiſſion of light, air, and duſt; but no poſſible ſtructure could prevent them from ſuffering by injuries of a different nature: We accordingly find, that the eye-ball is liable, like other parts of the body, to wounds, contuſions, and other injuries.

As the bones at the bottom of the orbit are in ſome parts extremely thin, wounds of the eye which penetrate deep prove frequently dangerous from the near contiguity of the brain: But ſuperficial wounds that penetrate only the anterior part of the eye, although they may deſtroy the beauty and utility of the organ, are not in other reſpects to be conſidered as hazardous. Wounds of this part, however, of whatever kind they may be, require at all times our moſt ſerious attention; not only with a view to the preſervation of ſight, but in order to prevent or obviate the effects of inflammation, a ſymptom which they very commonly induce.

Wounds

Wounds of the tranſparent cornea, hen directly oppoſite to the pupil, are oft frequently productive either of a to- l or partial loſs of viſion; for the cica- ix that ſucceeds very commonly re- ains opake during the life of the pa- ent: But although in this reſpect wounds the anterior part of the eye are always be dreaded, they are ſeldom attended ith ſo much inflammation as wounds of qual extent of the ſclerotica or opake ornea, which are always more painful, nd productive of more hazard.

The danger accruing from wounds of he eye, is, in general, proportioned to heir extent: In other parts of the body, ſmall punctured wound is more to be readed than a cut of greater extent; but n the eye, the riſk ariſing from wounds moſt frequently in proportion to their xtent; a circumſtance which with ſur- eons ſhould have an influence in the pre- erence to be given to the differ nt ope- ations performed upon this organ. It is ot the pain produced by wounds to which

I allude, and which frequently occurs to a greater degree from punctures alone, than from very extenſive cuts; but it is the riſk induced by large wounds of diſcharging the humours or contents of the eye, by which viſion, if not entirely deſtroyed, muſt at all times be greatly injured; and by which the eye is often ſo much diminiſhed as to ſink almoſt to the bottom of the orbit: We ſhall afterwards, however, when treating of Cataract, have occaſion to ſpeak more fully upon this ſubject.

The moſt important circumſtance in the treatment of wounds of the eye-ball, and to which our chief attention ſhould be directed, is to prevent or remove inflammation. When a wound in the eye is large, it is ſcarcely poſſible to prevent the humours from being diſcharged; for the natural and uſual action of the muſcles neceſſarily forces them out. In this caſe, no advantage is derived from the ſkill of the practitioner, and the uſe of the eye is immediately loſt: But where

here one eye is deſtroyed in this manner, twenty are ruined by inflammation, either from its being ſo violent, that no remedy can prove ſucceſsful, or from the diſeaſe being too ſlightly treated at firſt, and allowed to proceed too far before a proper application of remedies is adviſed: In every wound therefore of this organ, all thoſe means ſhould be immediately employed, which, by experience, we know to prove moſt effectual in the prevention of this ſymptom; but theſe having already been fully mentioned in Section II. of this Chapter, it is not neceſſary to enumerate them again.

In wounds of the eye-ball, the ſtructure of the parts renders it impoſſible to diminiſh the extent of the opening: The parts in this ſituation cannot, as in the eye-lids, be placed in contact and retained with ſutures: Nothing of this kind being here admiſſible, all that art can attempt, is, together with a ſtrict antiphlogiſtic courſe, to keep the eye lightly covered with a pledgit of any emollient ointment; to

bathe

bathe it from time to time with a weak ſolution of lead; and when the pain becomes ſevere, to give adequate doſes of opium.

In extenſive wounds of the eye, attended with an entire diſcharge of its contents, permanent blindneſs, with the uſual deformity induced by the ſinking of the eye-ball, muſt neceſſarily ſucceed; but in wounds of leſſer extent, we have it frequently in our power, by due attention to the means I have pointed out, to remove ſymptoms which otherwiſe would probably end in the greateſt danger.

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SECTION IV.

Of Tumors of the Eye-lids.

THE eye-lids are frequently infeſted with ſmall tumors, which by impeding their motion, and rubbing upon the globe of the eye, become often ſo very diſtreſsful as to require the ſurgeon's aſſiſtance for their removal.

The contents of theſe tumors are various, and of different degrees of firmneſs. Towards the internal angle of the eye, and moſt frequently on the under eye-lid near to the lachrymal punctum, many are liable to frequent returns of a ſmall tumor of the inflammatory kind, in this country commonly termed the Stye*. It begins with a ſenſation of fulneſs, ſtiff-

* This is a variety of the Hordeolum of Sauvages and other noſologiſts.

neſs, and uneaſineſs in the internal canthus of the eye. At firſt the ſkin is ſcarcely diſcoloured; but if the tumor proceeds to ſuppuration, it becomes firſt of a pale red, and afterwards yellow, when it commonly burſts and diſcharges a thick purulent matter. The ſtye is a tumor altogether inflammatory, and ſhould be conſidered indeed in no other light than a common boil or abſceſs. The only circumſtances in which it differs from boils in other parts of the body, are, the colour of the ſkin not being of ſuch a deep red at firſt, and its advancing more ſlowly to ſuppuration. This, however, proceeds evidently from the peculiarity of its ſituation; for the matter being ſeated between the tarſus and internal membrane of the eye-lid, the firmneſs of the cartilage prevents the ſkin which covers it externally from being much diſcoloured, at the ſame time that the preſſure produced by it may probably have ſome influence in preventing, or rather in retarding the

ie progreſs of that effuſion which appears be neceſſary for the formation of pus.

Theſe are the tumors that we moſt frequently meet with on the eye-lids; others, however, occur here, by which much more ſtreſs is often produced. By different authors a great variety of theſe have been deſcribed, but no real utility is derived from this. And as no benefit can be obtained from any diſtinction that does not point out ſome variety of practice, it is to this conſideration only by which I ſhall be directed in enumerating the varieties of the diſeaſe.

The inflammatory tumors, already deſcribed, are for the moſt part ſeated near to the internal canthus of the eye: many others to which the eye-lids are liable, appear indiſcriminately in every part of them. They are of three kinds, all of them differing from each other in their degree of firmneſs, and requiring a different method of treatment.

The firſt I ſhall mention is commonly of a round form, and ſomewhat ſoft or

compreſſible: It ſeems to move or roll when preſſed upon; the ſkin retains its natural appearance; and from the contents of it when laid open being of a fatty nature, we term it a Steatoma. The ſoft white matter, of which theſe tumors is compoſed, is always ſurrounded with a firm membranous cyſt.

Small tumors or excreſcences form occaſionally on different parts of the eyelids, in ſome inſtances, with narrow, pendulous necks; in others, with thin broad baſes. Some of them being of a ſoft fleſhy conſiſtence, are termed Sarcomatous tumors; whilſt others being hard and firm, are denominated Verrucæ, or Warts.

In the treatment of the ſtye or ſmall boil, ſo frequently met with near the internal angle of the eye, ſome doubt has ariſen of the propriety of bringing them to ſuppuration; and by many it is even ſaid, that we ſhould in perhaps every inſtance, by means of vitriolic and other aſtringent applications, attempt

empt to remove them by reſolution r diſcuſſion. Almoſt the only reaſon, owever, that can be given for this, , the trouble attending the contra- y practice of bringing them to ſuppura- ion: But when we conſider the advan- ages we derive from it, and the hazard f injuring the eye-lids by frequently at- empting to repel what nature means to iſcharge, we will not heſitate in the hoice of our method of cure. By bring- ng theſe tumors to ſuppuration, we incur ndeed ſome additional trouble; but it is eldom conſiderable: And as ſoon as mat- er is fully formed, if it does not burſt nd diſcharge itſelf, opening the tumor with the point of a lancet procures com- lete relief, and the ſore commonly heals quickly without farther trouble.

As ſoon therefore as a ſtye is clearly ormed, we ſhould endeavour, by a fre- quent renewal of warm emollient poul- ices, to bring the tumor to ſuppurate, nd then to diſcharge the matter with a

lancet, if it does not previouſly burſt of itſelf. I know from experience, that the practice is perfectly ſafe; that the pain attending it is inconſiderable; that it removes the riſk of harder and more inveterate tumors forming in the ſite of theſe affections, and which I have obſerved in different inſtances to be the conſequence of the uſual method of treating them. After this kind of boil has ſuppurated and diſcharged its contents, bathing the parts with a weak ſaturnine or vitriolic ſolution proves uſeful, in the proportion of a grain of ſaccharum ſaturni, or vitriolum album, to each ounce of water: It tends to remove any uneaſineſs that remains, and to reſtore the parts to their uſual tone.

All tumors of the eye-lids of a firm conſiſtence, whether ſteatomatous or warty, as they cannot be made to ſuppurate, ſhould be removed by exciſion, as ſoon as they impede in any degree the motion of the eye. As long as they remain ſmall, they

are

are for the moſt part inoffenſive, and are therefore overlooked; but whenever they begin to increaſe, they ſhould immediately be taken off.

In all warty excreſcences of a ſmall ſize, as well as in thoſe of the ſarcomatous kind, we are commonly directed to remove them with cauſtic; or if the baſe is ſmall, to do it with a ligature. This, however, is a practice that ſhould not be adopted: No reaſon indeed can be given for it but timidity either on the part of the patient or of the operator: Whether we employ cauſtic or ligatures, the cure muſt always prove tedious; they commonly excite inflammation and irritability of the eye, and they frequently give more pain than is ever done by the ſcalpel: In the removal therefore of every tumor of this deſcription, we ſhould truſt ſolely to exciſion, an operation neither attended with difficulty or hazard.

The patient being ſeated oppoſite to a window, and his head ſecured by an aſſiſt-

ant, if the tumor cannot be laid hold of with the fingers, a ligature ſhould either be paſſed round it, or puſhed through it with a needle, in order to enable the operator to raiſe it by pulling it gently from the parts beneath: And this being done, if its baſe is narrow, it may be removed at once; but when extenſively attached to the neighbouring parts, it is better by ſlow diſſection to enſure its total removal, than by proceeding quickly to incur the riſk of allowing part of it to remain, or to require farther trouble afterwards in removing it. On the operation being finiſhed, a piece of ſoft lint ſhould be applied to the ſore, and retained with a ſlip of adheſive plaſter; by which the ſore very commonly heals eaſily without farther trouble.

When, again, the tumor is of the ſteatomatous or encyſted kind, inſtead of diſſecting it off covered with the ſkin that ſurrounds it, by which a troubleſome unſeemly cicatrix is always produced, it anſwers

vers better merely to divide the ſkin by a ſimple inciſion with a common ſmall ſcalpel. This ſhould be done from one end of the tumor along the moſt prominent part of it to the other; and a ſtrong waxed thread being paſſed through the centre of the cyſt, this ſhould be given to an aſſiſtant, in order to ſeparate or raiſe it from the parts beneath, while the ſurgeon himſelf, with cautious diſſection, endeavours to ſeparate the ſkin and cellular ſubſtance from the whole circumference of the cyſt; and this being done, the tumor is eaſily removed by the ligature attached to it.

When, in the courſe of the operation, it has been found neceſſary to divide the internal membrane of the eye-lid, no dreſſing ſhould be applied to the ſore, as the moſt inoffenſive we could employ would irritate and inflame the globe of the eye. All that, in ſuch circumſtances, ſhould be done, is, to lay the lips of the ſore as nearly together as poſſible; and to remove

move as frequently as is neceſſary any ſuperfluous matter that may happen to form in it. But when, in the removal of theſe tumors, it is found neceſſary to cut entirely through the eye-lid, in order to render the cicatrix neat, the lips of the wound ſhould be drawn together with the fingers, and retained with ſlips of adheſive plaſter till they unite.

In the extirpation of theſe tumors, when the cyſt is firm, and the contents of the ſteatomatous kind, the bag ſhould be preſerved entire, as in this ſtate it is more eaſily and more effectually removed by doing ſo than in any other manner: But whenever the cyſt is thin, and eſpecially when the contents of it are fluid, it is commonly difficult, and in ſome inſtances impoſſible, to ſeparate the teguments from it beneath, without laying it open. In this caſe, after dividing the ſkin and cellular ſubſtance, by making an inciſion along the moſt prominent part of the tumor, it is better to open the cyſt at once by

r a large puncture with the point of a ncet, in order to diſcharge the matter ntained in it, than to make any attempt, is commonly done, to preſerve it en- re; by which, in ſuch circumſtances, e operation is always rendered more te- ous than it otherwiſe might be.

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SECTION V.

Of Inverſion of the Cilia, or Eye-laſhes *.

THE eye-laſhes are in ſome inſtances ſo much inverted, or turned inwards upon the eye, as to excite much pain, by rubbing or fretting the coats of it: In which caſe, it becomes neceſſary to remove them.

This inverſion of the cilia is produced by different cauſes: In ſome caſes, it proceeds from a derangement of the hairs themſelves, which leaving their uſual direction turn in towards the eye-ball: But more frequently it is produced by a cauſe of a more diſtreſsful nature, an inverſion of the tarſus or cartilaginous border of the eye-lid: This again is moſt commonly induced either by an unequal ſpaſmodic affection of the orbicularis muſcle of the under eye-lid; for it is not frequently met with

* The Trichiaſis and Entropium of authors.

th in the upper palpebra; or it occurs the effect of a cicatrix upon the ſkin this part, the conſequence of ſome preous injury: In ſome inſtances, it is proced by tumors, forcing the eye-laſhes upon the eye; and a relaxation of the ternal teguments of the eye-lid has likeiſe been ſuppoſed to induce it. As the uſe of the diſeaſe is various, ſo it is evint that the means of cure muſt likewiſe ſo.

When it is found to originate ſolely om a derangement of the cilia themlves, without any inverſion of the eyeds, we are directed by authors, in the ſt place, to pull out the inverted hairs ith a pair of ſmall pliers; and to preent them from growing again, we are efired to burn their roots either with luur cauſtic, or with the end of a red-hot ire. Nay, ſome have propoſed that the hole cartilaginous edge of the eye-lid which the hairs are placed, ſhould be ntirely deſtroyed with cauſtic.

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The pain and inflammation of the eye, induced by an inverſion of the cilia, is in ſome inſtances indeed ſo diſtreſsful, and it is ſo difficult to prevent them from rubbing upon the eye, that none who have ſeen how obſtinate ſuch affections often are, will be ſurpriſed at the attention given to them by almoſt every author who has written upon the ſubject: But it fortunately happens, that none of the painful remedies I have mentioned are neceſſary; for the ſame intention may in almoſt every inſtance be accompliſhed by means of a more ſimple nature.

When the eye-laſhes have remained long in a deranged ſtate, and have acquired their full ſtrength and elaſticity, it is altogether impoſſible to bring them again into a proper direction. In ſuch circumſtances, therefore, they ſhould all be pulled out by the roots; for to cut them over, as is ſometimes done, tends only to make them ſtronger and ſharper than they were before. This being cautiouſly done with a pair of ſmall forceps or pliers, relief is

is commonly obtained immediately: t unleſs ſome means are adopted to pre-nt the new hairs from taking a ſimilar rection, they very ſpeedily advance ſo as to induce a return of the diſeaſe. othing, however, can be done for this rpoſe, till the new hairs have acquired ne length; but as ſoon as they are a-ut half their uſual length, and whilſt ey are yet more ſoft and pliable than ey afterwards become, by turning them wn upon the eye-lid with the end of a olunt probe, and retaining them in this uation for two or three weeks, either covering them with narrow ſlips of heſive plaſter, or with ſtrong mucilage glue by means of a ſmall pencil, a com-ete cure may thus be commonly obtain-. Much attention is neceſſary, indeed, order to inſure ſucceſs; more, it muſt acknowledged, than the diſeaſe com-only meets with: But due perſeverance the means I have mentioned will in al-oſt every inſtance prove effectual; and ing an eaſy method of obtaining relief

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in a very painful affection, nothing ſhould be omitted that can tend to render the practice of it frequent and more certain.

When, again, the diſeaſe appears to originate from any of the other cauſes I enumerated, the particular nature of it muſt be aſcertained before any remedy can be employed. If it proceeds from an unequal ſpaſmodic exertion of the orbicularis muſcle of the eye-lid, no danger can enſue from making a ſlight inciſion on the internal ſurface of the under palpebra of ſuch a depth as to divide thoſe fibres of the muſcle that appear to be contracted, and by which the inverſion of the cilia is produced. The only inconvenience that this could produce, would be ſome degree of ſtiffneſs or immobility in the under eye-lid, but which could not even in the worſt degree of it, be of much importance: And as no other remedy could in this variety of the diſeaſe prove uſeful, we ſhould not heſitate to adviſe it. If then thoſe fibres of the muſcle that appear to be preternaturally contracted

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e freely divided, a cure of the diſeaſe ll be obtained, and the inciſion will rea- ly heal, without any dreſſings being ap- ed. In this ſituation, indeed, no dreſ- g can with propriety be employed; but perience ſhows that it it not neceſſary, r a cut in this part commonly heals ea- y.

When the cilia are found to be puſhed upon the eye, either by a tumor or ci- trix of ſome old ſore, no cure can be pected from any other means than the moval of the cauſe itſelf. When pro- ced by a tumor, this muſt be extirpa- l in the manner pointed out in the laſt tion; and when an old cicatrix falls to removed, we do it by making an inci- n with a ſcalpel ſo as to ſurround the ole of it, and afterwards in a ſlow utious manner diſſect it off.—When the ſſure produced by the cicatrix has been ſole cauſe of the cartilage being turn- inwards, the removal of the cicatrix ll in general remove the diſeaſe; and this caſe the ſore may be healed in the

uſual manner with eaſy dreſſings. But when it is found that the direction of the cilia is not immediately altered upon the cicatrix being removed, the lips of the ſore ſhould be drawn together, ſo as to bring the edges of the divided ſkin into contact; and in this ſtate they ſhould be ſecured either with ſlips of adheſive plaſter; or when this does not anſwer, it may be done either by the twiſted or interrupted ſutures: By which means the points of the eye-laſhes may be turned entirely outwards, ſo as to accompliſh in the moſt complete manner the intention of the operation.

It has alſo been ſuppoſed, as I have already remarked, that this diſeaſe may be produced by the external ſkin of the eyelid, being too much relaxed. This, however, is what I never met with; and as we cannot ſuppoſe that theſe parts are retained in their ſituation by any exertion of the ſkin alone, it is not probable that any relaxation to which it is liable can have any influence in giving them a wrong direction;

ſection; but if the contrary ſhould ever
the caſe, the remedy to be employed
obvious: If the diſeaſe is of ſhort du-
ion, and the relaxation and loſs of
e in the ſkin not conſiderable, ba-
ing the parts frequently with a ſtrong
tion of alum in an infuſion of oak-
k, or with any other aſtringent, may
obably remove it; but when this does not
wer, our only reſource is to remove
the relaxed ſkin with a ſcalpel: This
ng done, we draw the edges of the
together, and retain them either with
eſive plaſters or ſutures in the man-
already pointed out.

An inverſion of the cilia conſtantly ex-
s, as I have already obſerved, in-
mation of the eye-ball: This ſymp-
, however, commonly ſubſides on the
rs being removed; but when this does
happen, thoſe means muſt be employed
t prove moſt effectual for the removal
inflammation of the eyes, by whatever
ſe it may be induced. Theſe having
n enumerated in Section II. of this

Chapter, it is not neceſſary to ſpeak of them here.

I have already obſerved, that the inverſion of the cilia occurs moſt frequently in the under eye-lid. In ſome inſtances, however, we meet with it in the upper palpebræ; and in ſuch caſes it is ſcarcely neceſſary to remark, that the diſeaſe being exactly ſimilar both in its cauſes and effects, the means employed for removing it ſhould alſo be ſimilar. In the upper eye-lid we ſometimes meet with a ſwelling over the whole of it, by which the uſual and natural exertion of its muſcles is either much impeded or perhaps entirely interrupted, and by which too the eye-laſhes may be ſo far inverted as to produce this diſeaſe. In ſuch caſes, as the ſwelling of the eye-lid is commonly of the dropſical kind, it is more readily removed by two or three ſmall punctures with the point of a lancet than by any other means: But when this does not prove ſufficient, if it appears to be perfectly local, and not con-

necte

acted with an anaſarcous ſwelling over the reſt of the body, rather than allow vision to be much interrupted by a continuance of the ſwelling, it has been propoſed to cut out a ſegment of the moſt prominent part of the ſkin, to diſcharge the water that may be contained in it, and to reunite the divided edges of the wound with ſutures. Nay, much time and ingenuity has been employed in the invention of inſtruments for effecting this operation neatly, and without much loſs of blood; an occurrence, which in former times was always much dreaded. This ſhould indeed be guarded againſt as far as is neceſſary: But in the operation of which we are ſpeaking, it can never require much attention, for none of the blood-veſſels in thoſe parts are of a ſize that can render the diviſion of them dangerous.

The inſtrument to which I allude acted ſolely by preſſure: All the ſkin meant to be removed being included between two thin plates of braſs or ſteel, a degree of

preſſure ſufficient to deſtroy the circula
tion in the contained parts was applie
and continued by means of a ſcrew til
the whole dropped off; but as the opera
tion may be both more neatly and mor
ſpeedily done with a ſcalpel, it ought i
every inſtance to be preferred. In what
ever way it is done, as much of the ſki
ſhould be removed as appears to be ſuper
fluous: If the edges of the ſore, on bein
brought together, can be retained wit
adheſive plaſter, it ought to be done; bu
when plaſters do not anſwer, we have re
courſe to the interrupted ſuture.

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SECTION VI.

Of the Gaping or turning Outwards of the Eye-lids.

THIS affection is produced by the internal ſurface of one or both eye-lids being turned outwards ſo as to fold over ſome part of the cilia, and contiguous ſkin: By Noſologiſts it is in general termed Ectropium; and when the upper eye-lid only is affected, it has been termed Lagophthalmus, from a reſemblance it is ſuppoſed to bear to the eye of a hare.

Every degree of this affection occaſions deformity; ſo that even in this view it merits attention: But in its more advanced ſtages it frequently gives much miſtreſs, by leaving a conſiderable part of the eye uncovered.

The internal membrane of the eye-lids may be turned outwards by various cauſes: Tumors of whatever nature they may be

when ſeated within the orbit, ſometimes produce it: It is alſo induced by dropſical effuſions in the cellular ſubſtance that covers it; and likewiſe by inflammation of the ſame part. Relaxation, induced either by an inflamed ſtate of this part, by a previous dropſical ſwelling, or merely as a conſequence of old age, excites the moſt obſtinate kind of it: And laſtly, we find it often induced by the cicatrix of a wound or abſceſs, when ſo ſituated as to corrugate or contract the ſkin of either of the eye-lids. In the method of cure it is evident, that due attention becomes neceſſary to the particular cauſe by which it is produced.

When tumors are diſcovered to be the cauſe, they muſt be removed in the manner pointed out in Section IV. When induced by a dropſical affection, connected with general anaſarca, if the diſeaſe of the ſyſtem is carried off by general remedies, this particular ſymptom will moſt frequently yield; but when it appears to be local, as in ſome inſtances happens,

no

dependence is to be placed upon the
ibition of medicines: In this caſe,
effuſed fluid ſhould be diſcharged ei-
r by punctures or ſcarifications, not
de through the external coverings of
eye-lids, but directly into that part of
internal membrane that is protruded
the water collected within it. Small
nctures ſhould be firſt adviſed with the
int of a lancet; and when theſe fail, ſca-
ications ſhould be made with one or
ner of the inſtruments delineated in
ate XII. fig. 4. or in Plate XXIII.
. 5. all along the courſe of the ſwel-
g; and being carried to a ſufficient
pth, they will not only diſcharge the
uſed water, but the inflammation which
ey excite will tend to prevent it from
llecting again: After the water is diſ-
arged, and any inflammation induced
the operation is gone, the parts ſhould
frequently bathed with a weak ſolu-
n of white vitriol, or any other aſtrin-
nt collyrium.

In caſes of Ectropium induced by in-
mmation, our means of cure ſhould be
chiefly

chiefly directed to the removal of this ſymptom; and, for the moſt part, when not long neglected, or not particularly obſtinate, the protruſion will ſubſide on the inflammation being removed. But when the inflammation has ſubſiſted long, the protruſion often continues fixed and permanent long after the cauſe that gave riſe to it is gone: Whenever the diſeaſe therefore depends upon this cauſe, we ſhould endeavour by the moſt active remedies to have it ſpeedily carried off. In Section II. of this Chapter, theſe have been fully enumerated: I have now therefore only to remark, in addition to the remedies there pointed out, that deep ſcarifications into the inflamed membrane itſelf prove here particularly uſeful. The veſſels of the protruded membrane are in this ſtate of the diſeaſe commonly ſo turgid as to give it a conſiderable degree of preternatural thickneſs: Unleſs this increaſe of bulk is removed, no cure can be expected; and nothing with which we are acquainted tends ſo much to accom-

pliſh

liſh this as unloading the inflamed veſ-
ls of their contents, and which is done
n the moſt effectual manner by deep ſca-
ifications.

When, again, the diſeaſe occurs from
elaxation, as it often does in advanced
ages of life, no chirurgical operation
ould be adviſed: In this ſituation we
uſt altogether to palliatives: The pa-
ent ſhould be deſired to bathe his eyes
aily in cold water, or in water mixed
ith a ſmall proportion of brandy; or,
e may uſe an aſtringent collyrium of
hite vitriol and ſaccharum ſaturni diſ-
olved in water. In this manner, he may
revent the diſeaſe from advancing far-
her, and in ſome inſtances may even be
ble to remove it. But whether this
ould be the caſe or not, when it is evi-
ently induced by old age, nothing very
evere in its operation ſhould ever be ad-
iſed.

The moſt diſtreſsful, and perhaps the
noſt frequent cauſe of ectropium, is the
icatrices of ſores, abſceſſes, and of the
confluent

confluent ſmall pox, when ſo ſituated as to contract the ſkin of either of the eye-lids. A cicatrix may be ſo ſituated, as we have ſeen in the laſt ſection, as to produce an inverſion of the cilia. Of this I have met with different inſtances, but it more frequently happens, that the diſeaſe we are now conſidering is induced by it.

As the diſeaſe is here evidently induced by a preternatural contraction of the ſkin connected with the eye-lid, nothing can accompliſh a cure but the diviſion of ſuch parts of the ſkin as are thus morbidly drawn together. For this purpoſe, the operator, by an attentive examination of the parts affected, ſhould render himſelf perfectly certain of the full extent of the diſeaſe; and having done ſo, an inciſion ſhould be made directly acroſs that part of the ſkin which appears to be contracted, and ſhould be carried freely into the cellular ſubſtance by which the ſkin is connected to the parts beneath. When the contraction takes places at one point only,

nly, if a free diviſion of the ſkin is ade at this part, it will immediately be moved: But it commonly happens, that ne ſkin is fixed to the parts beneath over ne whole courſe of the cicatrix; in which vent, a ſmall inciſion, in the manner I ave mentioned, and with which operaors in general reſt ſatisfied, will have ttle or no effect in removing the diſeaſe.

In this caſe, after making an inciſion nrough the teguments from one end of ne cicatrix to the other, the edge of the ivided ſkin ſhould be raiſed with a pair f diſſecting forceps, and the whole of it hould be ſeparated and removed with the calpel from the parts to which it adheres. f this is properly done, that part of the ye-lid that was turned outwards, will ither return of itſelf to its natural ſituaion, or it may be eaſily replaced by the perator; and this being done, the reſt of the cure muſt conſiſt in ſuch an applieation of a bandage, or of ſlips of adheſive plaſter, as will retain the ſkin, till by the formation of granulations at the bottom

of

of the ſore, any farther contraction may be prevented. To give directions for the application of bandages is unneceſſary, as it muſt always be directed by the ingenuity of the operator. In general, however, I may remark, that when ſlips of adheſive plaſter can be made to anſwer the purpoſe of bandages, they ſhould always be preferred for parts contiguous to the eyes, where bandages can never be applied with ſuch tightneſs as to retain the dreſſings, without injuring the parts beneath.

SECTION VII.

Of Concretion of the Eye-lids.

T has long been known, that any two parts of an animal body being kept in ntact when in a ſtate of inflammation, ry readily unite together; a fact that counts for many phenomena, and a-ong others for thoſe adheſions of the e-lids that ſometimes ſucceed to an in-imed ſtate of theſe parts. Inflamma-on of the eye-lids, when of long dura-on, frequently forms partial adheſions, ot only of the eye-lids to each other, it to different parts of the eye itſelf: To ght degrees of this, a patient will com-only rather ſubmit, than undergo the ain and terror of an operation; but hen the adheſions are ſo conſiderable as o impede the motion of the eye-lids, and ius to obſtruct viſion, it becomes neceſ-

ſary

ſary to employ the moſt effectual means for relief. It ſometimes happens, too, that the eye-lids adhere together at birth.

When the adheſion is ſlight, and not of long duration, it may in general be removed by ſeparating thoſe parts of the eye-lids that adhere, with the end of a blunt probe paſſed behind them; but when they adhere either firmly to each other, or to the eye-ball, a cure can be effected by diſſection only. In performing this operation, the patient's head ſhould be firmly ſecured by an aſſiſtant, who ſhould likewiſe endeavour to ſupport or elevate the upper eye-lid, whilſt the ſurgeon, with ſmall forceps in one hand, ſhould raiſe or ſeparate the under palpebra, and at the ſame time ſhould proceed to divide with a ſcalpel in the other, every fibre by which the adheſion is produced. In every part of the operation much ſteadineſs and accuracy is required; particularly where any part of the palpebræ adhere to the eye-ball.

When

When the cauſe of adheſion is thus completely removed, as the dreſſings uſually employed to ſores cannot with propriety be uſed here, all that we ſhould attempt, is to cover the eye with ſoft lint ſpread with Goulard's cerate or any other emollient ointment; and after the firſt dreſſing, a ſmall portion of the ſame ointment, perhaps the ſize of a pea, may be gently inſinuated between the eye-lids: by this means the ſore is kept ſoft and moiſt, at the ſame time that the uſual motion of the eye-lids prevents every riſk of new adheſions between the parts newly divided. In this, however, as well as in every operation upon the eye, the ſtructure of which is ſo delicate as to render it very ſuſceptible of inflammation, much attention is neceſſary to prevent this ſymptom, and to remove it when it has actually taken place.

SECTION VIII.

Of Fleſhy Excreſcences on the Cornea.

EYES that have been liable to repeated attacks of inflammation, are apt to have a membranous ſubſtance form on ſome part of the opake cornea: This, in ſome inſtances, continues of a ſmall ſize, and does not produce much inconvenience, while in others it extends ſo as to form a ring round the whole tunica conjunctiva, and even ſpreads to ſuch an extent as to cover not only all the opake cornea, but even the tranſparent part of the eye.

Being ſuppoſed to reſemble a fowl's wing, it has by ſome been termed Pterygium, and by others Onyx, from its reſemblance to the nail of a finger: It begins moſt frequently near the internal angle of the eye; but in ſome we firſt perceive

ve it on the moſt prominent part of
tunica albuginea.

In ſome inſtances of ſevere inflamma-
n, a tough yellow-coloured membra-
us ſubſtance forms and ſpreads over the
ole eye-ball: It appears, however, to
perfectly inorganic, and is evidently
the ſame nature with thoſe cruſts or
dations ſo frequently met with in parts
ently inflamed: But the diſeaſe we are
v conſidering conſiſts of an organic
mbranous ſubſtance, that is equally ir-
ible with other parts of the body, and
ich, when wounded, diſcharges blood
ely. It it indeed ſo clearly vaſcular,
to render it probable that it conſiſts
irely of a congeries of ſmall blood-
ſels, which being once forced out from
point of the ball of the eye, either
a conſequence of external violence or
inflammation from any other cauſe, we
eaſily ſuppoſe that every freſh attack
inflammation will cauſe them pullu-
or ſhoot out in a degree ſomewhat

proportioned to the violence of the cauſe by which it is produced.

In ſome inſtances, this production does not appear till the violence of the inflammation is over: In which caſe, it is not accompanied with pain, unleſs when ſome cauſe of irritation is applied to it; but in others it takes place during the continuance of inflammation, when the pain attending it is always ſevere. During this inflammatory ſtate of the diſeaſe, this membrane is in general of a deep red colour; but when the inflammation ſubſides, it becomes pale and ſomewhat yellow.

As long as this kind of excreſcence continues of a moderate ſize, and does not impede the motion of the eye-lids, nor obſtruct viſion, all we ought to do is by means of gentle aſtringents, to endeavour to prevent its increaſe. In ſection II of this chapter, I have ſaid all that appears to be neceſſary on the ſubject of inflammation. I ſhall now therefore ſuppoſe that the inflammatory ſymptoms are

y the means formerly pointed out, ei-
ier removed or much mitigated, and that
ur attention is now to be directed to the
moval of this preternatural membra-
ous production. In this ſtate of the diſ-
aſe, aſtringent applications, as I have
bſerved above, ought to be alone depend-
d on as long as the ſize of the excreſ-
ence is inconſiderable. A weak ſolution
f corroſive ſublimate in water, in the
roportion of a grain to four ounces of
ater, has ſometimes proved uſeful; but
n general, nothing anſwers either with
ich certainty or ſafety as white vitriol,
r alum, diſſolved in water, care being
ken to have the ſolution of ſuch a ſtrength
s the eye can eaſily bear. A ſcruple of
hite vitriol, or half a dram of alum,
o four ounces of water, will in general
rove ſufficiently ſtrong: but in every
aſe, the ſtrength of the remedy ſhould
e adapted to the feelings of the patient;
or with ſome it may be employed of
ouble the ſtrength that can be admitted
y others.

A proper uſe of eſcharotic powders has alſo proved uſeful in this diſeaſe; but in this form, eſcharotics require to be uſed with much caution. Calcined alum in fine powder, a ſmall proportion of white vitriol, or of verdegris, mixed with a ſufficient quantity of white ſugar, or any other powder of a mild nature, may all be uſed for this purpoſe. A ſmall quantity of any of theſe may be ſprinkled upon the diſeaſed part once or twice daily, and repeated as long as any advantage is derived from them; or the uſe of the powders may be alternated with that of the waſh in the manner I have mentioned.

A due perſeverance in the uſe of theſe remedies will very commonly retard, as I have obſerved above, the progreſs of the excreſcence; but when it proves otherwiſe, and when it proceeds ſo far as to cover any part of the tranſparent cornea, as this might ſoon be attended with a total loſs of ſight, other means ſhould be employed.

As our object here is to remove the excreſcence entirely, the ſcalpel alone is to be depended on. Authors, who have written upon the ſubject, deſcribe an operation for the purpoſe of removing membranes of this kind by diſſection. When the excreſcence is looſe through a conſiderable part of its extent, and attached to the eye by a ſmall pedicle only, it may be removed with ſafety and expedition with a ſcalpel; and in ſuch caſes, this method ſhould be preferred to every other. But whenever the excreſcence adheres to the eye over its whole ſurface, to remove it by diſſection is difficult and hazardous; and as the ſame intention may be accompliſhed by more gentle means, theſe ought to be adopted.

This excreſcence is very commonly ſeated, as I have already obſerved, upon ſome part of the tunica conjunctiva, and approaches in a gradual manner towards the centre of the eye: We have likewiſe ſeen that it conſiſts almoſt entirely of an extenſion or elongation of a number of

ſmall blood-veſſels: Hence we may conclude, that nothing will tend more effectually to remove it than the deſtruction or diviſion of thoſe veſſels by which it is produced: And accordingly I have in various inſtances been able to accompliſh the cure of ſuch affections by theſe means alone. And as the operation for this purpoſe, with thoſe accuſtomed to perform it, is neither difficult nor dangerous, it ought always to be attempted as ſoon as the diſeaſe is found to reſiſt the means uſually employed.

The method of performing it is this: The patient being placed upon a pillow on the floor, the ſurgeon, ſitting behind on a chair, ſhould cauſe him incline his head backwards upon his knees, with his face raiſed in ſuch a manner that a ſufficient degree of light may fall directly upon his eyes. This being done, and the patient's hands properly ſecured, the under eye-lid ſhould be drawn down by an aſſiſtant, while the upper palpebra is ſupported in ſuch a manner by the left hand

of

the ſurgeon, as to expoſe to view the ll extent of the diſeaſe on the eye-ball. ith the knife, fig. 4. plate XII. he is ow to make ſcarifications through the ll thickneſs of the excreſcence, near , and entirely round its external cir- mference, ſo as to cut off all communi- ation between the roots and extremities thoſe veſſels of which it is formed. his may either be done by one continu- l ſtroke of the ſcalpel, or with repeated maller ſcarifications; and in order to ren- er the ſucceſs of the operation more cer in by a free diviſion being made of eve- y blood-veſſel connected with the ex- reſcence, after the diſcharge of blood nduced by the firſt inciſions is abated, ne, two, or more circular ſcarifications ay be made within one another, in ſuch manner as that the laſt may be contigu- us to the centre of the excreſcence.

In making theſe ſcarifications, it is ne- eſſary to avoid the eye-ball; for which eaſon, it is better to do the inciſions by epeated ſtrokes, than to go to the full depth

depth of the excreſcence at once; but it may be done with much more eaſe in the manner I have mentioned, and with equal ſafety, to the eye, than by lifting the excreſcence with a needle and ligature before dividing it; for we may juſt as readily injure the coats of the eye with the needle as with a ſcalpel: This method of elevating the parts to be divided by means of a ligature, is much recommended by ſome practitioners; but I know from experience, that the operation may be performed with more eaſe in the manner I have pointed out.

After as many inciſions have been made as appear to be neceſſary, the parts may be allowed to bleed freely, and may be afterwards bathed two or three times daily with a weak ſolution of ſaccharum ſaturni. The inciſions may alſo be repeated in a ſimilar manner, if, in the courſe of a few days, the excreſcence does not begin to diminiſh; and the ſame operation may be renewed with ſafety from time

me to time, as long as any part of the
ſeaſe is found to remain.

When, again, any portion of the excreſ-
nce is obſerved to become more looſe in
connection with the eye, either in con-
quence of the number of inciſions made
it, or of the ſuppuration which com-
only enſues from this operation, it ought
all means to be removed with the ſcal-
l: but when this does not take place, and
nen every part of it continues ſtill to ad-
re firmly to the eye, no attempt ſhould
made to remove it.

When a cure can be effected by any
eans hitherto known, the plan I have
entioned will more readily prove ſuc-
ſsful than any other; and being attended
ith no hazard to the eye, it ought to be
eferred. But it is neceſſary to remark,
at although this operation very com-
only proves effectual, yet inſtances ſome-
mes occur, in which no advantage is de-
ved from it, and in which ſcarifications
ade in the excreſcence, or any other
peration performed upon it, inſtead of
proving

proving uſeful, are regularly attended with an increaſe of the diſeaſe. This being found to be the caſe, the operation I have deſcribed ſhould not be perſiſted in. In ſuch circumſtances, a palliative courſe ought alone to be kept in view. No remedy with which we are acquainted will in this ſtate remove the diſeaſe, but it may commonly be prevented from acquiring any additional increaſe; and the ſymptoms induced by it may be kept moderate, by the eye being frequently bathed with a weak ſaturnine ſolution, and by keeping it covered with pledgits of Goulard's cerate, or any other application of a ſimilar nature.

When it is found, however, that the diſeaſe does not yield to any of the remedies I have mentioned, and if the excreſcence ſtill proceeds to acquire an additional bulk; ſo as entirely to deſtroy viſion and to excite ſevere pain, as this will give much cauſe to ſuſpect that it may degenerate into cancer, it ought at once to be removed by extirpating the eye-ball. The

remedy

remedy is no doubt ſevere: But in circumſtances ſuch as we are deſcribing, as the uſe of the eye is ſuppoſed to be irrecoverably loſt; and as the patient's life might be endangered by the contiguous ſound parts being allowed to remain long in contact with thoſe that are diſeaſed; if doubt ſhould be entertained of the propriety of removing them. The method of performing this operation will be the ſubject of one of the following ſections.

SEC-

SECTION IX.

Of Abſceſſes in the Globe of the Eye.

INFLAMMATION of the eyes is by experience known to terminate moſt frequently by reſolution; that is, the pain and tenſion abate, and the redneſs and fulneſs of the veſſels are diſcuſſed, without any marks being left of their having ever exiſted. Inſtances, however, occur of inflammation of the eye ending in the formation of matter; in ſome caſes, from thoſe means being neglected at firſt that tends moſt certainly to remove inflammation; and in others, from the patient being of a ſcrophulous habit or otherwiſe diſeaſed.

When the internal ſurface of the coats of the eye has been long inflamed, it is apt to yield a purulent like matter, which being poured into one or other of the chambers of the eye, is ſoon diffuſed over all

a the aqueous humour; by which the
l of the eye not only becomes enlar-
il, but viſion is either in a great mea-
e or perhaps entirely deſtroyed; the
pearance of the eye is much changed;
d neither the iris, pupil or cryſtalline,
m be diſtinguiſhed.

In ſome inſtances again, the iris is
ſhed forward, and is obſerved to lie
cloſe contact with the internal ſurface
the tranſparent cornea: The coats of
e eye being weaker here than in other
rts, a protruſion commonly takes place,
nich, if not ſoon opened, at laſt burſts
itſelf, and diſcharges either ſome part
perhaps the whole contents of the eye;
d at this opening, the iris, in a thick-
ned diſeaſed ſtate, is very generally puſh-
l out. It is this diſeaſe which, from its
ppoſed reſemblance to a grape, is deno-
inated Staphyloma; different varieties of
hich are deſcribed by authors under dif-
rent names: But as theſe are all of a ſimi-
r nature, and require the ſame method
f treatment, any difference of form from

whence

whence theſe denominations have been taken, is not of ſuch importance as to deſerve notice; and as the diſtinctions they hold forth anſwer no good purpoſe, I do not mean to enumerate them.

Under the general term of Staphyloma, a word I ſhall retain merely from its having been long employed, may be comprehended all collections, ſuch as I have deſcribed, that take place within the cavity of the eye. In moſt inſtances, as I have already obſerved, the tranſparent cornea is protruded from its being the weakeſt part of the eye; but in others, partial ſwellings or protruſions occur in the ſclerotica, or opake cornea.

During the formation of this diſeaſe, the patient ſuffers not only loſs of ſight, but ſevere pains in the eye, that ſhoot backwards through the head, attended with want of reſt, heat, and other ſymptoms of fever; and theſe very commonly remain either till the eye burſts of itſelf, or till its contents are diſcharged by an opening made for the purpoſe.

In

In moſt inſtances, the pain is ſevere, ut I have met with caſes in which no ther inconvenience was experienced but eformity and loſs of ſight: But in theſe, ny matter formed in the ſwelling is in mall quantity, and the principal part of ne tumor ſeems to be produced by ſe- um; and in ſome inſtances perhaps by n increaſed ſecretion of the aqueous hu- our of the eye: But whether the ſwel- ng contains a greater or ſmaller propor- on of pus, the external appearances are ne ſame, and the method of treatment likewiſe ſimilar.

Beſides the collections I have deſcribed, which the matter is lodged within the oats of the eye, this organ, we find, is able to abſceſſes of a different nature, in hich the matter is ſeated in the ſubſtance one or other of its tunics. In the ſmall- ox it ſometimes happens that a puſtule is ated on the eye-ball, when the vario- us matter being formed between two its coats, gives all the appearances of ſmall abſceſs; but collections of pus

alſo occur here from external injuries, and from inflammation by whatever cauſe it may be induced, although by no means ſo frequently, as I have already remarked, as in other parts of the body.

This diſeaſe has in general been termed Hypopyon. It ought not, however, to be diſtinguiſhed by any particular appellation: For it is preciſely an abſceſs in the coats of the eye, and exhibits exactly the ſame appearances here, and requires to be treated in the ſame manner, as collections of matter in any other part of the body.

The matter in this diſeaſe is met with in various parts of the eye; in ſome inſtances in the ſclerotica; but moſt frequently in the tranſparent cornea, when it very commonly deſtroys viſion entirely.

The hypopyon is diſtinguiſhed from the ſtaphyloma by the matter being collected in a particular bag or cyſt; at leaſt it is always confined to one part of the eye, which is obſerved to be eleva-

d into the form of an ordinary abſceſs, hilſt the reſt of the eye retains its uſual rm: But in the other, altho' the matter ways at laſt forces out ſome protube- nce; moſt frequently, as I have alrea- y obſerved, in the tranſparent cornea; et an enlargement may be commonly ſerved over the whole ſubſtance of the ye-ball: In both, the motion of the eye- ds is much impeded: But in the ſtaphy- oma, this is always more conſiderable and ore diſtreſsful than in the other, and a nſe of tightneſs is felt over the whole lobe of the eye; whereas in the hypo- yon, this uneaſineſs occurs at a particu- r point only. In the latter, too, the ain is ſeldom ſo ſevere as when the mat- r is collected within the ball of the eye. ny uneaſineſs produced by it, affects the urface of the eye only, and does not pread back towards the head as it com- nonly does in the ſtaphyloma.

In the treatment of the ſtaphyloma, as rarely happens that the uſe of the eye an be preſerved, our great object ſhould

be to abate the violence of the pain, and remove that deformity which an enlargement of the eye is always ſure to produce. With a view to abate the pain, blood-letting, bliſters, cooling applications to the eye, and opiates, are to be chiefly depended on in the commencement of the diſeaſe. In this ſtage of the diſeaſe, indeed, the pain is to be conſidered entirely as the effect of inflammation, and to be accordingly treated in the manner I have pointed out in Sect. II. of this Chapter.

But when theſe and the other means employed for abating inflammation, do not ſucceed; if ſuppuration takes place; and if the pain ſtill continues ſevere, as this very commonly occurs from the coats of the eye being diſtended; nothing will ſo certainly give relief, as diſcharging the matter by making an inciſion into the ball of the eye. This will commonly indeed evacuate all the humours of the eye, particularly the aqueous humour; but in circumſtances ſuch as we are deſcribing, this is not to be regarded, as viſion is to-

illy deſtroyed by the diſeaſe. We are herefore to uſe the moſt effectual means or removing pain, and for obviating the eformity induced by the tumefaction of he eye, without any regard to the hu-ours contained in it. For this purpoſe, n opening ſhould be made in the eye ſuf-ciently large for diſcharging all the thin-er part of its contents, and the proper lace for this inciſion is the moſt depending art of the tumor. The patient's head eing ſecured by an aſſiſtant, and the ope-ator ſtanding before him, the eye-lids ay be ſufficiently ſeparated with the fin-ers of one hand, while the point of the nife, fig. 4. Plate XII. being introdu-ed with the other into the part to be pened, it may be eaſily carried forward n a horizontal direction, till an opening s made of a ſize ſufficient for the purpoſe.

Authors who have written upon this ubject, inſtead of a ſimple inciſion into he ſwelling, direct all the prominent part f the eye to be cut off either with a ſcal-el or ſciſſars: Whilſt others, from an ap-

prehenſion of hemorrhagies being produced by ſuch an extenſive wound as this would occaſion, have adviſed the tumor to be removed with a ligature; by which they imagine that the eye may be ſufficiently diminiſhed, at the ſame time that the deformity produced by the ſwelling will be effectually removed. There is no neceſſity however for our adopting either of theſe methods; which are both of them more painful, and neither of them in any reſpect more uſeful than the mode I have adviſed, of diſcharging the contents of the tumor by a ſimple inciſion. The diſeaſe, as I have already obſerved, is in reality an abſceſs, or a collection of matter within the coats of the eyes; and it ought to be treated exactly in a ſimilar manner with abſceſſes in other parts of the body; not by removing any part of the tumor, but merely by laying it open in the manner I have mentioned. There is indeed a variety of the ſtaphyloma ſometimes met with, in which, either from a long continuance of the diſeaſe, or from

ſome

ome cauſe with which we are not acquainted, the different humours of the eye are totally abſorbed, or as it were annihilated, and in which all the external appearances of the diſeaſe that has juſt been deſcribed, are diſtinctly obſerved; but in which the tumor is formed by a thickening of the different coats of the eye, and particularly of the iris. In ſuch occurrences, this operation could not prove ſerviceable; and the only means to be truſted, is the removal with a ſcalpel of all the prominent part of the eye. It rarely happens, however, except in the very advanced ſtages of ſtaphyloma, that this variety is met with.

After the contents of the eye have been diſcharged, the parts ſhould be ſlightly covered with a ſoft compreſs, moiſtened with a weak ſaturnine ſolution; the patient ſhould be kept upon a low diet; and every part of an antiphlogiſtic regimen ſhould be purſued, either till the wound in the eye is completely cured, or till there ap-

pears to be no riſk of an acceſſion of inflammation.

With reſpect to the treatment of the hypopyon, namely, that ſpecies of the diſeaſe in which matter is collected either in the ſubſtance of one of the coats, or between two of the coats of the eye, it ſhould be nearly the ſame with what I have adviſed for the ſtaphyloma. In general, the pain is moderate, or is eaſily kept ſo with ſmall doſes of opiates; and as ſoon as the matter is freely and clearly formed, it ſhould be diſcharged by an inciſion made in the manner I have mentioned, in the moſt depending part of the abſceſs.

The general practice on this point ought not however to be followed. We commonly obſerve that practitioners decline to operate, till they are in ſome meaſure forced to it, either by the deformity being conſiderable, or by the abſceſs becoming ſo large as to impede the motion of the eye-lids.—But delays ſhould be always avoided when it is obvious that ſuppuration has taken place; for as the matter

of

the abſceſs may juſt as readily burſt in-
ardly, and mix with the humours of the
e, as outwardly by an external opening;
d as this very conſtantly terminates in
total loſs of viſion, it ought in every in-
ance to be guarded againſt, by diſ-
arging the matter as ſoon as it is cer-
in that ſuppuration has taken place.—
he after-treatment of the parts ſhould
the ſame here as in caſes of ſtaphy-
ma.

In both theſe diſeaſes, fungous excreſ-
nces are apt to form where the opening
s been made; but they may commonly
prevented from riſing high, by the ap-
ication of calcined alum in fine pow-
r, or touching them from time to time
ith lunar cauſtic, a practice from which
have never known any hazard enſue.

SEC-

SECTION X.

Of dropſical Swellings of the Eye-ball.

IN dropſical ſwellings of the eye, the patient complains of a ſenſe of fulneſs in the eye-ball, long before any increaſe is perceived in it by others: At laſt the motion of the eye-lids begins to be impeded; and although the power of viſion ſtill remains in ſome degree, yet it gradually becomes more imperfect, till at laſt the patient can ſcarcely diſtinguiſh light from darkneſs. In this period of the diſeaſe, too, ſome part of the eye, moſt frequently the tranſparent cornea, generally begins to protrude, ſo as to form a ſmall tumor, and if the contents of the eye are not now diſcharged by an operation, the ſwelling in this ſtate commonly proceeds to increaſe quickly, and ſoon burſts of itſelf.

When

When the diſeaſe has been of long du-
ion, it is apt to be miſtaken for ſtaphy-
ıa, to which indeed it bears a great re-
ıblance. But in the real dropſical ſwel-
g, the patient is always ſenſible to the
cts of light; and if the pupil can be
inguiſhed, a clear light will commonly
ke it contract. Now, in the other, ex-
oting in its very firſt ſtages, the patient
never ſenſible to light, nor can any
ıd of contraction be diſcovered in the
oil. When theſe diſeaſes, however, are
advanced, our being able to diſtinguiſh
em could be of little importance, as in
s ſituation the uſe of the eye is in ge-
ral ſo much deſtroyed as not to be re-
verable: But in the commencement of
s affection, we may very commonly di-
nguiſh it from the other; and when we
able to do ſo, it ought not to be ne-
ected.

Staphyloma is evidently an inflammatory
ection: It begins with all the ſymptoms
inflammation, and terminates in the for-
ation of pus. By this circumſtance alone
is very diſtinctly marked; ſo that, in
the

the early period of the diſeaſe, it is eaſily diſtinguiſhed from a mere dropſy of the eye; in which no ſymptoms of inflammation take place, and in which the only marks of diſeaſe at firſt are, a ſenſation of fulneſs in the eye, which by degrees terminates in an enlargement of the eye-ball, and in a confuſed ſtate of viſion.

When, by a long continuance of the diſeaſe, viſion is deſtroyed, all that we have in our power to do, is to remove deformity produced by the enlargement of the eye-ball; which may be effectually done by an inciſion made in the moſt prominent part of the tumor, in the manner pointed out in the preceding ſection. But in the earlier ſtages of this affection, an object of greater importance preſents itſelf, I mean the poſſibility of ſaving the uſe of the eye; which, from the reſult of ſome caſes that I have met with, there is reaſon, I think, to imagine might in many inſtances be done.

When water or any other fluid collects in the eye in ſuch quantities as to diſtend it

much beyond its natural ſize, viſion is
us frequently deſtroyed merely by di-
nſion, when no other morbid affection
perceived. In ſuch circumſtances, when
e nature of the diſeaſe is obvious, and
ſoon as the eye begins to loſe its uſual
wers, inſtead of allowing the ſwelling
increaſe, as is commonly done, till it
ives at a great bulk, and till the power
viſion is loſt; would it not be better to
charge the fluid by which the ſwelling
produced? No danger could reſult
om it, for the operation may be done
th ſafety; and it would at leaſt prevent
e eye from ſuffering by over-diſtenſion,
d might thus give ſome chance of a cure
ing obtained, either as an effort of na-
re, or by the application of proper re-
edies.

The eaſieſt and beſt method of per-
rming this operation, is by making a
all opening in the under and moſt de-
nding part of the tranſparent cornea.
paſſing the point of the knife, fig. 4.
ate XII. into this part of the cornea,

and

and making an inciſion of three-tenths of an inch or thereby in length, all the aqueous humour may be eaſily diſcharged, and as the wound ſeldom heals immediately, the water or ſerum would thus be allowed to drain off almoſt as quickly as it is ſecreted. But in the event of the diſeaſe returning after the wound in the cornea is healed, as a repetition of the operation in this part might induce a cicatrix of ſuch a ſize as would injure viſion, I ſhould think it better to make an opening into the poſterior chamber of the eye, directly behind the iris, either with the point of the knife above mentioned, or with a very ſmall trocar. This inſtrument, if not thicker than a crow's quill, and made of a flat or lancet-point form, will penetrate the coats of the eye with almoſt as much eaſe as a round couching needle; and an opening made with it will evacuate the aqueous humour of the eye with more certainty than an opening of an equal ſize made in any other manner.

The

The patient's head being properly ſup-
rted by an aſſiſtant, the eye-lids may
ſufficiently ſeparated by the operator
nſelf, with the fingers of one hand,
ilſt, with the other, the trocar is
ſhed into the moſt depending part of the
e: The point of the inſtrument ſhould
ter at the tenth part of an inch behind
e iris, and ſhould be carried to ſuch a
pth, that the end of the canula may be
mpletely covered by the coats of the
e, when the ſtilette ſhould be with-
awn; and as much of the aqueous hu-
our being allowed to run off, as is judged
oper, the canula may be taken out,
nen the opening will require no farther
tention. With a view, however, to
engthen the eye, and, if poſſible, to
event a return of the diſeaſe, the parts
ay be frequently bathed with an aſtrin-
nt waſh; ſuch as cold water with a cer-
in proportion of brandy, a ſolution of
um, or a decoction of oak-bark. In this
anner a complete removal of the diſeaſe
ay in ſome inſtances be obtained; and

as

as it gives at leaſt ſome chance of preſerving the eye, I do not heſitate to recommend it in preference to the uſual practice of allowing the tumor to become ſo large before being opened, as to produce in almoſt every inſtance an entire loſs of ſight.

When the diſorder has arrived at ſuch a height as to deſtroy viſion entirely, it has been propoſed to diſcharge the contents of the eye, by paſſing a ſmall ſeton or cord through it: But in an organ of ſuch delicate mechaniſm, whoſe parts are all extremely irritable, there is reaſon to imagine that more pain and inflammation would in general enſue from this, than from a free inciſion made with a knife, or with a lancet; and as the full intention of the operation may be anſwered by this means, it ſhould therefore, I think, be preferred.

SEC-

SECTION XI.

Blood effuſed in the Cavity of the Eye-ball.

A FREE paſſage of the rays of light to the bottom of the eye, ſo neceſſary to a perfect ſtate of viſion, requires a clear and tranſparent ſtate of the different humours of the eye. We find accordingly, that viſion is always greatly impaired, in many inſtances even deſtroyed, by any of the humours becoming opake, and nothing tends more certainly to induce opacity of the aqueous humour than blood being effuſed in it.

Blood may be effuſed in the aqueous humour of the eye, by various cauſes. In ſome inſtances it has been the effect of putrid diſeaſes, proceeding either from a diſſolved ſtate of the blood; or more probably from a lax ſtate of the ſolids, by which the red globules of the blood are

admitted into veſſels and parts which do not naturally receive them, and by which all the ſecretions are in theſe diſeaſes frequently tinged with blood. Blood is ſometimes poured into the eye, too, as the effect of an inflamed ſtate of this organ; but we meet with it more frequently, as the conſequence of a ruptured blood-veſſel, from external violence, than from any other cauſe. It frequently enſues from blows on the eye, and from wounds that penetrate the poſterior chamber. In ſome inſtances, too, wounds that penetrate the anterior chamber only are ſucceeded by effuſions of blood; but this is not frequent, as the veſſels of this part of the eye are in general ſo extremely ſmall as to be incapable of admitting red blood.

In whatever manner blood may be effuſed in the eye, if it mixes with the aqueous humour, ſo as to render it opake, and is not ſoon abſorbed, as ſometimes happens, it ought to be diſcharged by an operation. In a few caſes, we obſerve, that a ſmall quantity of blood is effuſed

in

the eye, without exciting any inconvenience, by its ſinking immediately below the axis of viſion, and remaining in this ſituation without mixing with the aqueous humour. In this caſe, no attempt ſhould be made for removing it: For as long as it continues at the bottom of the eye, no harm is done by it; and we have always in our power to remove it, if, at any period in future, it is found to diſſolve in ſuch a manner in the aqueous humour as to render it opake. The method of performing this operation ſhould be the ſame with what is pointed out in the laſt ſection, for the removal of dropſy of the eye.

The opening ſhould be about three tenths of an inch in length, and it ought to be as near to the moſt depending part of the tranſparent cornea as the junction of the iris to the coats of the eye will permit: In order to promote the diſcharge of the blood, the patient ſhould be deſired to turn his face downwards, and the ſides of the divided cornea may

be ſomewhat ſeparated by the end of a blunt probe. As the aqueous humour will be diſcharged along with the blood, the eye will appear to be much diminiſhed by the anterior part of it collapſing. This, however, is a matter of little importance; for the wound in the cornea commonly heals ſoon, and the aqueous humour is in general quickly renewed. The only application required after the operation, is a compreſs of ſoft lint moiſtened in a weak ſolution of ſaccharum ſaturni.

SECTION XII.

Of Ulcers on the Globe of the Eye.

IN Chapter IV. I entered into a full conſideration of the theory and management of ulcers: I ſhall now therefore in general refer to what I there endeavoured to eſtabliſh: But ulcers in the eye merit particular attention; for we have here not only the cure of the ulcers to keep in view, but means muſt be employed to prevent or remove thoſe marks or ſpots which they almoſt univerſally produce, and which very commonly terminate either in a total or partial loſs of ſight. In other parts of the body, the cicatrix induced by an ulcer is ſeldom productive of much inconvenience; but in the eye, the cicatrix of even the ſmalleſt ſore does much harm. It is evident, however, that this effect of

ulcers muſt depend much on the part of the eye on which they are ſeated. Thus, we obſerve, that even large ulcers form on the tunica conjunctiva without viſion being injured; whilſt in the tranſparent part of the eye they very commonly deſtroy it entirely. Our prognoſis therefore, in theſe affections, muſt in general depend in a great meaſure on their ſituation; for ſores, which in one part of the eye might not be of much importance, will in others render the organ uſeleſs.

The danger attending ulcers on the eye, depends in ſome meaſure, too, upon their form, which we find to be equally various here as in other parts of the body; but the ſtructure of the eye renders the form of any ſore that occurs in it of more importance than it can poſſibly be in any other ſituation. In ſome inſtances, ulcers upon the eye are very ſuperficial, being no deeper than the tunica adnata; whilſt in others they are ſmall, narrow, and penetrate to a conſiderable depth. Thoſe which ſpread upon the

ſurface

rface of the eye may deſtroy viſion by e cicatrix which they produce; but the ep-ſeated ulcers are not only attended ith this effect, but very commonly ter-inate in an evacuation of the aqueous umour, either from their penetrating mmediately through all the coats of the ye, or from their leaving ſuch a weak-eſs in ſome particular part, as admits of ne aqueous and other humours, forcing paſſage for themſelves.

In other caſes again, inſtead of a loſs f ſubſtance being produced by ulcers, he parts become ſoft and fungous, and xcreſcences or granulations ſhoot out, s we frequently find to be the caſe in ores of other parts of the body.

Ulcers of the eye may ariſe from va-ious cauſes; ſuch as wounds, contuſions, nd burns. And they may be induced y a general diſeaſe of the conſtitution; uch as lues venerea, and ſcrophula. But n moſt inſtances they may be traced as he effect of inflammation terminating in uppuration; for abſceſſes in the eye are

often met with; and every abſceſs terminates in an ulcer, excepting in a very few inſtances; in which they either continue during life, or in which the matter, inſtead of being diſcharged by an opening, is abſorbed into the ſyſtem.

Ulcers of the eye are not only often induced by inflammation; but it commonly happens, that inflammation is the moſt troubleſome ſymptom with which they are attended: Indeed the pain ariſing from an inflamed ſtate of an ulcer on the eye, proves in ſome inſtances ſo very diſtreſsful, as to induce reſtleſſneſs, heat, quickneſs of pulſe, and every other ſymptom of fever: So that in the treatment of theſe ulcers, this ſymptom of inflammation requires our moſt ſerious attention.

When they are found therefore to be in an inflamed ſtate, blood-letting, both general and local, ſhould be employed; together with bliſters, laxatives, and cooling applications to the eye, in the manner pointed out in Section II. of this Chapter, for the cure of Ophthalmia:

For

till the violence of this ſymptom abates, no remedy we can employ for the cure of the ulcers will prove effectual. In other caſes of ophthalmia, along with general evacuations, I have urged, in a particular manner, the propriety of local blood-letting, by ſcarifying the turgid veſſels of the eye. In ulcers of the eye, too, where enlarged veſſels are frequently obſerved to paſs from the ſores over a conſiderable part of the eye, it often proves uſeful to cut theſe veſſels completely across; not only for the removal of inflammation, but for the cure of the ulcers. From obſerving the effects indeed that reſult from this practice, I think it probable, that the diſcharge afforded by ulcers of the eye is commonly ſupplied by theſe turgid veſſels that run into them; for it often happens, that the ſores are cured by this remedy alone, when every other means have failed. The operation, however, requires to be very neatly and readily performed; for when deep and extenſive ſcarifications are made in the

neighbourhood of an ulcer, they are apt to degenerate into tedious ſores of a ſimilar nature. This, however, is not the fault of the remedy, but of the method of putting it in practice: for it is an effect I have never obſerved to reſult from it, when the turgid veſſels only have been divided; which may be eaſily done in the manner I have mentioned in Section II. of this Chapter.

Some have objected to this practice, that by dividing the lymphatics which proceed from the ſores along with the turgid blood-veſſels, the healing of the ſores will be rendered more tedious than it otherwiſe would be; for theſe, by abſorbing the matter ſecreted or diſcharged into ulcers, they conclude muſt have a conſiderable influence on the cure: And therefore, it is ſaid, that we ſhould not run the riſk of dividing them, by ſcarifying the large veſſels of the eye, which they very commonly accompany. The idea is ingenious; but ſo far as I have obſerved, it is not ſupported by experience.

ace. Scarifications, when improperly performed, may in ſome inſtances, as I have obſerved above, do miſchief; but in many caſes of ulcers of the eye, I have known them prove very uſeful. Beſides, we might, from reaſoning alone, conclude, that ſcarification, when properly performed, ought not to do harm; and that the doubts which have been entertained with reſpect to it, cannot be well grounded: For although ſome proportion of the matter afforded by ulcers is no doubt carried off by abſorption, yet daily experience ſhows, that we are never to depend upon this for effecting a cure; and, on the contrary, that ſores are more frequently cured by applications that ſeem to act by deſtroying the power of the abſorbents, as well as of the other veſſels with which ulcers are ſupplied, than by any other means; namely, by drying aſtringent remedies, and by external preſſure applied with ſuch firmneſs as muſt frequently annihilate the ſmaller veſſels of ſores, by keeping them

for

for a conſiderable time cloſely compreſſed together.

After the inflammatory ſtate of an ulcer on the eye has been removed in the manner I have mentioned, our views ought to be exactly the ſame as in the treatment of ſores in other parts of the body; and the means employed for effecting them, muſt, for the moſt part, be likewiſe ſimilar. When the diſeaſe is connected with any general affection of the ſyſtem, proper remedies muſt be adviſed for correcting this before any permanent cure can be expected. In ſome inſtances ſores on the eye are combined with lues venerea; in which caſe a well-directed mercurial courſe is to be chiefly depended on: But they are much more frequently combined with ſcrophula; a diſeaſe which more frequently affects the eyes than any other part of the body; and hitherto we have not been ſo fortunate as to diſcover any certain remedy for its removal. Cold bathing, however, with the uſe of muriated barytes, ſteel

mineral

neral waters, bark and other tonics, il living in a dry atmoſphere, frequent- prove uſeful; and for the ſymptom t we are now conſidering, namely, ul- s on the eyes, iſſues, when duly per- ed in, are to be more depended on n any remedy with which we are ac- ainted.

In the local treatment of ſores upon e eye, the remedies to be employed ſt depend entirely on the appearances ich take place. Before any attempt is de to induce the formation of a cica- x, any fungous excreſcences which oc- r muſt be deſtroyed; and if the matter charged is thin, and the bottom of the er foul, theſe circumſtances muſt be rrected. With this view, detergent atments and waſhes, as they are call- , ſhould be applied; and for the remo- l of excreſcences, the ſcalpel and eſ- arotics are alone to be depended on.

A general prejudice prevails againſt the e of ſtimulating applications to the eye; d in many of the diſeaſes to which this organ

organ is liable, they certainly cannot be employed with propriety; but in others, eſpecially in ulcers, they may not only be applied with ſafety, but with much advantage: in many inſtances a cure cannot be otherwiſe accompliſhed; and a great deal of miſchief is daily done by the contrary practice of a long-continued uſe of emollients. In caſes of ophthalmia, accompanied with much pain and tenſion, a proper uſe of emollients, particularly of warm fomentations and cataplaſms, prove in ſome inſtances extremely uſeful; but in ulcers of the eye, after the inflammation is removed, inſtead of being productive of any advantage, I have conſtantly obſerved them do harm. They not only ſeem to promote that tendency to relaxation and ſponginеſs which uſually occurs in theſe ſores, but in different inſtances they have appeared to be the ſole cauſe of thoſe excreſcences very frequently met with in ulcers of the eye, and which always prove extremely troubleſome. When I firſt engaged

ged in practice, I entered into a free
of remedies of this claſs, in ulcers as
ell as in other affections of the eyes;
I now think it fair to acknowledge,
om repeated inſtances of their proving
rtful, that I am convinced that they
ould be employed with much caution.

In ulcers that are hollow, with foul
ges, and that diſcharge thin and per-
os fetid matter, a liniment of wax and
., with a ſmall proportion of red pre-
itate, commonly anſwers the purpoſe
cleanſing them; or the ſame intention
y be obtained from a remedy of the
me nature, prepared with white vitriol,
with a ſmall proportion of verdigris;
re being taken to have the liniment of
h a thin conſiſtence, that with a ſmall
uſh or pencil a little of it may be eaſi-
applied at any time over the whole
face of the ſores. By adding a ſmall
portion, too, of camphor to applica-
ns of this nature, their effects in clean-
g ulcers of the eye are frequently im-
oved; and the ſame remedy proves
ſometimes

ſometimes uſeful in a diſſolved ſtate, when employed as a waſh to the ſores. The moſt effectual waſh, however, for this purpoſe, is either a weak ſolution of verdigris or white vitriol in water; and I have in ſome inſtances employed, with advantage, a weak ſolution of corroſive ſublimate. One grain of corroſive mercury in four ounces of water, makes a ſolution of a ſufficient ſtrength for this purpoſe.

Practitioners not accuſtomed to the application of irritating ſubſtances to the eye, may be ſurpriſed to find red precipitate, verdigris, and even corroſive ſublimate, recommended; but daily experience ſhows, that in many diſeaſes of this organ they may be employed both with freedom and utility.

When by a due continuation of theſe means, or of remedies of a ſimilar nature, an ulcer on the eye is properly cleanſed, and a good ſuppuration induced, granulations will ſoon be obſerved to form; any deficiency of parts which may have been

lon induced by the ſore will be filled
u; and, if no interruption occurs to the
e, a cicatrix will ſoon be obtained.

t often happens, however, in this ſtate
the ulcer, that a cure is difficult to
ompliſh. The ſurface of the ſore re-
ins ſoft, and becomes ſomewhat ele-
ed above the reſt of the eye, by which
catrix is prevented from forming upon
In this ſituation, drying aſtringent ap-
cations prove moſt effectual. The parts
ected ſhould be covered once or twice
ly with lapis calaminaris finely levi-
ed; with prepared chalk, or crab's
s; and they may be bathed morning
evening with a ſtrong ſolution of alum;
h brandy properly diluted; or with a
ong infuſion of galls or oak-bark:
theſe means, when the conſtitution is
erwiſe healthy, a cure will in general
obtained.

When, again, a ſore upon the eye, in-
d of being hollow and attended with a
truction of ſome of the parts in which
s ſeated, is found to be covered with a
gous production, this excreſcence muſt

be removed before any permanent cure can be expected; and the ſame means muſt be employed for this purpoſe here, that prove moſt effectual for the removal of excreſcences in other parts of the body.

In ſome inſtances, theſe productions arrive at a conſiderable ſize, and, after ſeparating the eye-lids, fall down upon the upper part of the cheek. Of this, different caſes are recorded by authors; ſome of which were on diſſection found to be connected with the more interior parts of the eye, and in which extirpation of the eye might have ſaved the patient: But it ſometimes happens, that tumors of this kind adhere to the ſurface of the opake cornea only, when they may commonly be removed without any material injury being done to the eye. In general, we are directed to remove theſe excreſcences with ligatures; but as this commonly proves painful, tedious, and uncertain, the ſcalpel or lunar cauſtic ought for the moſt part to be preferred.

For

For the removal of a large excreſcence, ci-ſion by the ſcalpel ſhould alone be ſiſted; and when done with caution, n danger enſues from it. The patient be-ig firmly ſeated oppoſite to a clear light, ail the ſurgeon ſitting before him, his ad ſhould be ſupported by an aſſiſtant nind, who at the ſame time ſhould ſe-rate the eye-lids, by elevating the one d drawing down the other; which may eaſily done by the fingers of each nd properly placed upon them. This ing accompliſhed, a needle armed with firm waxed ligature ſhould be paſſed rough the centre of the excreſcence, for e purpoſe of fixing it and raiſing it as uch as poſſible from the ſurface of the e: With one hand the operator ſhould y hold of this ligature, while with a ſcal-l in the other he ſlowly and ſteadily re-oves the excreſcence. The only dreſſing at ſhould be applied, is a piece of ſoft nt ſoaked in a weak ſolution of ſaccha-m ſaturni, laid over the eye-lid; and the ſore produced by the operation

does not heal eaſily, ſome of theſe aſtringent applications muſt be employed that I have juſt had occaſion to mention.

But in the treatment of excreſcences of the eye which are neither pendulous nor much elevated, there is no neceſſity for the uſe of the ſcalpel,as they may almoſt always be removed by a proper application of cauſtic. By touching the ſurface of the part intended to be deſtroyed with a piece of lunar cauſtic, either daily or once in the two days, any protuberance which occurs will ſoon be removed; and the ſore being in this manner reduced to the level of the reſt of the eye, a cure may be obtained by the means I have already mentioned.

It is neceſſary, however, to remark, that in the application of cauſtic to the eye, much ſteadineſs and nicety is required; but with due attention it may be done with perfect ſafety, and often with much advantage. In order to prevent the reſt of the eye from ſuffering by coming in contact with the cauſtic, the eye

ould be previouſly fixed with a ſpeculum; id after the excreſcence is rubbed over ith cauſtic, before removing the ſpecu- m it ſhould be entirely waſhed off with ſmall bruſh or pencil ſoaked in warm ater; or in warm milk, which proves mmonly more effectual than any other quid for deſtroying the activity of cau- ic. In this manner, all the advantages ay be obtained from the uſe of lunar uſtic that we daily derive from it the removal of excreſcences in other rts of the body; and when applied ith caution, it may be done without ſk.

I have already remarked, that when e conſtitution is ſound, ulcers of the eye ill commonly heal by the means that I ave mentioned; but it happens in ſome in- ances, that they ſtill continue obſtinate, nd even daily become more virulent, not- ithſtanding the uſe of theſe and all the her remedies that are employed: In hich event, whenever the diſeaſe has ad- anced ſo far as to deſtroy viſion, and

when it is ſtill proceeding to increaſe, as nothing but extirpation of the morbid parts will afford any chance of preventing it from ſpreading to the contiguous ſound parts, this ought certainly to be adviſed. The method of extirpating a diſeaſed eye will be the ſubject of a different ſection.

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SECTION XIII.

Of Specks or Films upon the Eye.

VISION is frequently obſtructed by opake ſpots or films forming upon the eye; a diſeaſe commonly termed Leucoma, Albugo, or Nubecula.

Spots of this kind are met with upon the ſclerotica or white part of the eye; but, as the inconvenience that enſues from them in this ſituation is ſeldom of much importance, they do not often become the object of Surgery. In the tranſparent part of the eye, however, they always require our moſt ſerious attention; for in this ſituation, even the leaſt degree of opacity is apt to terminate in an entire loſs of viſion: And although we cannot in every inſtance remove them entirely, yet we can often do ſo, and, by proper treatment, we have it frequently in our power

to preſerve eyes which otherwiſe would in all probability be loſt.

I have already given a deſcription of various affections that may tend to obſtruct viſion, by inducing an opake ſtate of the tranſparent cornea and humours of the eye. Thus every high degree of inflammation; the ſtaphyloma, hypopyon, and ulcers on the tranſparent part of the eye; are all attended with this effect: But as each of theſe forms a diſtinct diſeaſe, requiring a method of treatment peculiar to itſelf, I have judged it proper to allot a ſeparate ſection for each of them. What I now mean to conſider, are thoſe white opake ſpots frequently met with on the cornea, and which occur moſt commonly as the conſequence of inflammation.

Affections of this kind are for the moſt part, indeed, ſo evidently induced by inflammation, that it may be doubted if they ever occur from any other cauſe; for all thoſe ſpecks that ſucceed to wounds of the cornea, as likewiſe thoſe which occur

d from ſmall-pox and meaſles, are al-
ys preceded by an inflamed ſtate of the
: I therefore conclude, that they de-
d, perhaps entirely, on inflammation,
whatever cauſe this may at firſt be ex-
d.

In attending to the nature of theſe o-
e ſpots upon the eye, it appears ſuffi-
ntly obvious, that they are the effect
moſt inſtances of that effuſion, which
ammation, when in a high degree, al-
ys excites. In ſome caſes, when it
minates in complete ſuppuration, a
all abſceſs is produced; which either
burſting, or on being opened in the
nner directed in a preceding ſection,
y commonly leaves an opake ſpot, at-
ded with ſome degree of prominency
elevation of the parts in which it is
ted: But in others, when the effuſion,
ead of being near to the ſurface of the
rnea, is diffuſed among the different
nellæ of which this coat of the eye is
mpoſed; or when the degree of inflam-
tion which takes place is not ſufficient

for

for carrying it on to ſuppuration, the opacity induced by it does not, as in the caſe of an abſceſs, form a protuberance; but appears rather to conſtitute a part of the ſubſtance of the cornea itſelf. In the one, the different lamellæ of the cornea are evidently ſeparated from each other; and on the matter contained between them being diſcharged, the ſpeck which remains appears in the form of an adventitious body, adhering to, but not intimately connected with that part of the eye on which it is ſeated: Whereas in the other, that is, when a ſmall effuſion only has taken place, and when no tendency to ſuppuration occurs, although a very conſiderable degree of opacity may be produced by it, yet the niceſt examination will not diſcover the cornea to be at this part either elevated or increaſed in thickneſs. In this caſe, the diſeaſe appears to form a part of the eye itſelf, and cannot be ſeparated from it but with the deſtruction of the organ; whereas in the other, the appearances which it exhibits

a ſuch as would lead one to conſider it e irely as a preternatural formation; a l in many inſtances it may be removed w hout much injury being done to the e .

These ſpots upon the eye are met with i various forms and in different degrees d magnitude; but the inconvenience ich they induce is always in propor- n to their extent, to their degrees of acity, or to their ſituation with reſpect the pupil; for as they prove hurtful rely by preventing the rays of light om paſſing to the bottom of the eye, it evident that it is by one or other of eſe circumſtances that this muſt be deter- ned. When a ſpot upon the eye, there- re, is either ſo ſmall, ſo ſlightly opake, ſo far removed from the pupil, as not injure viſion, it ought not to be conſi- red as an object of Surgery; for till e uſe of the eye is impaired by it, as it never attended with pain unleſs when e parts are inflamed, no other conſider- ion can render it proper to meddle with

with it: For every practitioner knows that this organ is ſo very delicate, as often to ſuffer more by the means employed for removing diſeaſes, than it previouſly did by the diſeaſes themſelves. But whenever viſion is materially impaired, we are then authoriſed to endeavour to remove the cauſe by thoſe means which experience has ſhown to prove moſt fit for the purpoſe.

I have endeavoured to ſhew that inflammation is to be conſidered as the principal and perhaps the only cauſe of ſpecks upon the eye: This ſhould therefore be a powerful argument, in every inſtance of inflammation of the eye, for loſing no time in the application of proper remedies for removing it; for whenever the diſeaſe has gone ſo far, as to induce even the ſmalleſt degree of effuſion, we can never be certain of being able to prevent either a partial, or perhaps a total loſs of ſight. The means beſt adapted for the removal of inflammation having been already pointed out, it is not now neceſſa-

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repeat them; ſo that I ſhall men-
thoſe remedies only which are to be
fly depended on in the treatment of
ks already formed.

n the management of ſpecks upon the
it is a matter of much importance
tend to the particular nature of each
hem; for the two varieties I have
tioned of this diſeaſe, are ſo very op-
te to each other, that ſuch remedies as
e beneficial in the one, are ſcarcely,
t all, admiſſible in the other: And
ce we find, that the ſame applications
ng indiſcriminately employed in eve-
aſe, much injury is done which ought
to happen; and remedies fall into diſ-
lit, which, when properly applied,
ve highly uſeful.

hus we find by experience, that eſcha-
cs of a moderate ſtrength may with
ty be applied to the eye; and as ſpecks
n the cornea are often removed by
n, it has long been a common prac-
to apply them with equal freedom in
ry caſe. By attentive obſervation,

however,

however, to this branch of practice, I am convinced, that it is in one variety of the diſeaſe only that remedies of this claſs ever prove uſeful; namely, in that which is attended with an evident prominency or elevation of the diſeaſed part. In ſuch inſtances, when the cornea beneath is ſound, the removal of this elevated opake ſpot will leave it tranſparent, and fit for the purpoſes of viſion; and in ſuch caſes, mild eſcharotics may with much propriety be employed: But in the other variety of the diſeaſe, where the effuſed matter ſeems to ſpread through the whole ſubſtance of that part of the cornea in which it is ſeated, without raiſing or elevating any part of it, no advantage can be expected either from eſcharotics, or any other outward application. In this caſe, the diſeaſed part of the cornea, as I have formerly mentioned, does not ſeem to be thicker than the other parts of it; and it is impoſſible to deſtroy the effuſed matter without deſtroying the cornea itſelf. In ſuch circumſtances, the employment

ment of eſcharotics can never be proper; and I have no heſitation in ſaying, that in this ſtate of the diſeaſe, they can never be uſed but with a great riſk of doing him.

It ſometimes happens, however, even in this variety of the diſeaſe, that the patient recovers either a partial or even a complete uſe of his eye, by the opacity in the cornea being gradually carried off, probably by abſorption taking place of the effuſed matter. As this has in ſome inſtances been effected by a natural exertion of the ſyſtem, practitioners ſhould endeavour to aſſiſt this operation of nature, by employing ſuch remedies as are known to prove moſt effectual in promoting abſorption: With this view, there is nothing perhaps to be more depended on than a gentle courſe of mercury. In ſimilar effuſions in other parts of the body, mercury often proves uſeful; and it is the only internal medicine which, ſo far as I have yet ſeen, ſhould ever be employed for films or ſpecks on the eye. Iſſues have

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in ſome inſtances, too, appeared to be uſeful; and as a cord in the neck in general diſcharges freely, it commonly anſwers the purpoſe in the moſt effectual manner.

With the ſame view, too, a briſk purgative given from time to time proves ſometimes uſeful; but it muſt be acknowledged, that the effect of our practice in this diſeaſe is always uncertain: For although, in a few caſes, ſome advantage has apparently been derived from the remedies I have mentioned, it has not happened ſo frequently as to admit of our placing much dependence on any of them.

But although we ſeldom derive advantage in this variety of the diſeaſe, either from internal medicines or external applications, it often happens in the other, that a due attention to the different circumſtances of the caſe proves highly uſeful. As in this caſe we ſuppoſe the diſeaſe to be produced by a thin lamella of the cornea being elevated and ſeparated from the reſt of the tunic beneath, by an effuſion of

ſome

me kind of matter, and as this ſepara-
d portion is in general opake, one chance
f effecting a cure is to remove it entire-
. Even this will not always leave the
ve perfectly clear and tranſparent; for
ſometimes happens, either from the ef-
uſed matter having been of a ſharp cor-
oſive nature, or from its having been
ng confined, that a roughneſs, attend-
l with ſome degree of opacity, is left
pon the remaining part of the cornea.
his, however, is not univerſally the caſe;
nd, at any rate, although a complete cure
ay not in every caſe be obtained by the
moval of the elevated part of the cor-
ea, yet in almoſt every inſtance ſome
dvantage will be derived from it, by its
lmitting a greater quantity of light to
aſs to the retina.

Spots of this kind may be taken away
ther with the knife or eſcharotics; but
general, the knife ſhould be preferred.
he eye being properly fixed with a ſpe-
ulum, Plate XIV. fig. 1. the ſurgeon
ould ſeat himſelf in a convenient height

between the patient and the clear light of a window; when, with repeated ſmall ſtrokes of the knife, Plate XII. fig. 4. he ſhould endeavour to cut away and remove all that portion of the cornea that he finds to be in any degree ſeparated the reſt; for no part of it that is looſe will ever adhere again, and the cure will not be complete if any portion of it is allowed to remain.

The natural delicacy and irritability of the eye would appear to render this operation exceedingly difficult; but it may be done with ſafety by ſurgeons of ſteadineſs and obſervation. The ſpeculum I have mentioned fixes the eye completely; and on the head being properly ſecured by an aſſiſtant, the operation is done with eaſe. The knife I have mentioned will in moſt caſes be found to anſwer; but in a few inſtances a knife with two edges I have thought has anſwered better. A repreſentation of this knife may be ſeen in Plate XVI. fig. 1.

Patients,

Patients, however, will not always ſubmit to this operation: In which caſe we are under the neceſſity of employing eſcharotics; and by theſe being continued for a ſufficient length of time, we have it often in our power to remove blemiſhes of much firmneſs and of conſiderable extent: and although very ſtrong applications of this kind, are not admiſſible, and have frequently done miſchief by creating pain and inflammation, yet I think it right to remark, that there is no neceſſity for ſo much caution on this point as is in general inculcated; for daily experience evinces, that a good deal of freedom may be uſed in the application of remedies of this claſs to the eye. It has been alleged, that, beſides exciting pain and a temporary ſtate of inflammation, eſcharotics muſt prove hurtful by corroding and inducing ulceration on the ſound part of the eye, juſt as readily as they will deſtroy the ſpot intended to be removed. This reaſoning is ſpecious, but not ſupported by experience; for every

practitioner muſt have obſerved, and it is particularly well known to itinerants, who commonly uſe no delicacy in matters of this kind, that ſpecks upon the cornea are frequently removed by eſcharotics alone, without any kind of harm being done to the reſt of the eye; and the fact, I think, may be accounted for. So far as I have been able to obſerve, thoſe ſpecks in which eſcharotics are employed with moſt advantage, conſiſt of a ſubſtance in which there is little or perhaps no animal life; at leaſt they are perfectly white, are deſtitute of the circulation of red blood, and are ſo far inſenſible that little or no pain is experienced from their being cut or even bruiſed with much freedom. Now we know, that in other inſtances, eſcharotic or corroſive applications of a moderate ſtrength will deſtroy a part of a dead animal, which during the life of the animal did not in any degree act on it. This is particularly remarkable in a proceſs that ſometimes occurs in the ſtomach after death; a curious

fact,

act, firſt taken notice of by that very in-genious practitioner Mr John Hunter of London. The ſtomach has frequently been found on diſſection to have holes corroded in it, even where no pain or o-ther ſymptom of diſeaſe of this organ had previouſly exiſted; from whence we may fairly conclude, that the liquor ga-ſtricus, or that fluid which nature has provided for the purpoſes of digeſtion, al-though during the life of the animal it may act only as a moderate ſtimulus to the viſcera, yet after death, the ſtomach being now deprived of the power of re-ſiſting the corroſive property of this li-quor, comes at laſt to be deſtroyed by it. In the ſame manner we may ſuppoſe, that a dead lifeleſs ſpot may be removed by corroſive applications, the ſtrength of which is not ſufficient to affect the reſt of the eye.

We may thus perhaps account for the cauſe of this phenomenon; but whether our reaſoning ſhall appear to be well found-ed or not, the fact, as I have ſaid, is cer-

tain, that corroſive applications may be made to the eye ſufficiently ſtrong for removing many of thoſe ſpots to which it is liable, without doing any injury to the reſt of the organ.

For a conſiderable time I was afraid to apply eſcharotics to the eye; farther experience, however, has convinced me, that they may be uſed with more ſafety than is commonly imagined.

Remedies of this kind may be uſed in different forms; but they are moſt conveniently employed in the form of a powder, an ointment, or a waſh. When powders are uſed, they ſhould be very finely levigated; otherwiſe, by their ſpiculæ, they are apt to irritate and inflame the eye: and, for the ſame reaſon, when conjoined with ointments, they ſhould be very finely prepared. Articles of this kind that are ſoluble in water, are perhaps preferable to any; for in the form of ſolution they can never prove hurtful if their ſtrength is duly regulated, as in this manner

er none of their ſharp ſpiculæ can come contact with the eye.

In the form of a powder, various articles have been employed; but the moſt effectual perhaps of any is red precipitate, or verdigris finely levigated, and mixed with three or four parts of fine ſugar. Calcined alum, too, and white vitriol, likewiſe mixed with a proportion of ſugar, or with egg-ſhells in fine powder, have frequently proved uſeful.

Ointments for the ſame purpoſe are prepared by adding to fine hogs-lard or any mollient ointment of the ſame conſiſtence, ſuch a proportion of any of the powders I have mentioned as the patient is able to bear; and waſhes are made by diſſolving a due proportion of the ſubſtance to be employed, in water. For this purpoſe, verdigris or white vitriol are employed with advantage; and in ſome inſtances I have known good effects reſult from a weak ſolution of corroſive ſublimate. The following is a form of ointment much employed by Mr Pellier, both

for the removal of ſpecks and inflammation. ℞. Mercur. precip. rub. Lapid. Calam. pp. āā ʒiſs. Lythagyr. pp. ʒi. Tutiæ pp. ʒſs. Cinnab. Nativ. ℈i. F. pulv. tenuiſſim.: miſce cum axungiæ parcinæ ʒii. et adde balſam. Peruvian. gutt. xv.

Of this, a little is introduced on the end of a blunt probe, between the eye-lids, evening and morning, at the ſame time that a weak ſaturnine ſolution is employed as a waſh.

It is impoſſible, in caſes of ſpots upon the eye, to confine any application to the diſeaſed part; all we can do is to inſert the powder, ointment, or waſh, as much as poſſible within the eye-lid; by the motion of which it is very quickly conveyed over the whole ſurface of the eye. In order, however, to have every poſſible advantage from remedies of this claſs, their uſe ſhould be long perſiſted in, and two or even more of them ſhould be employed at the ſame time. Thus, a ſmall quantity of any of the powders or ointments I have mentioned, may be inſerted within

the

e eye evening and morning, and a weak
.ution of corroſive ſublimate, of verdi-
iis, or white vitriol, may be employed
rice or thrice daily for waſhing the eye.
It cannot be alleged, that theſe or any
her remedies will in every inſtance prove
ffectual; but I can with confidence ſay,
at a prudent and long-continued uſe of
tem has often removed ſpots upon the
es, which otherwiſe would probably
ve terminated in an entire loſs of vi-
on.

SEC-

SECTION XIV.

Of Protuſions of the Globe of the Eye from the Socket.

EVERY practitioner muſt have met with inſtances of the eye being puſhed more or leſs from its natural ſituation in the ſocket, and various cauſes are recorded of it by authors.

1. A partial protruſion of the eye-ball takes place in ſome of the diſeaſes treated of in the preceding ſections; particularly in the hypopyon, ſtaphyloma, and in dropſical ſwellings of the eye.

2. The eye may be diſplaced or puſhed from its ſocket by external violence. And

3. It may be raiſed or elevated by tumors forming beneath it.

Even the ſlighteſt diſtortion or diſplacement of the eye affords a very diſagreeabl

greeable appearance; and to thoſe not accuſtomed to meet with it, gives much cauſe to ſuſpect that viſion will be completely deſtroyed by it. All ſuch affections have therefore been in general conſidered as incurable: Little or nothing has accordingly been attempted for removing them; ſo that patients labouring under them have for the moſt part been allowed to finiſh a miſerable exiſtence without any means being employed for their relief. But although viſion cannot in every affection of this kind be preſerved, yet in moſt inſtances it may be done; and wherever there is any chance of this being practicable, it ought always to be attempted.

As the means of cure to be employed muſt depend upon the cauſe by which the diſeaſe is induced, it is a point of the firſt importance for practitioners to attend to

When the ball of the eye is morbidly enlarged from any of the cauſes I have mentioned; namely, from water, pus, or any other fluid collected in any part of it, if a portion of it is by this cauſe puſhed

puſhed out from the ſocket, all that art can do, is to diminiſh the ſize of the eye in the manner I have pointed out in ſome of the preceding ſections, either by puncture, inciſion, or perhaps by removing a portion of it. In moſt caſes of this kind, viſion will be irrecoverably loſt; but by the means I have mentioned, the deformity produced by the diſeaſe may be commonly removed.

When, again, the eye-ball is puſhed from its ſocket by external violence, as the optic nerve will be ſuddenly ſtretched, we might *à priori* conclude, that viſion would be deſtroyed by it. This will moſt frequently be the caſe; but it does not always happen: For inſtances have occurred of the eye being puſhed ſuddenly and entirely out of the ſocket, and on being replaced, of viſion being as perfect as it was before.

Several years ago I met with an inſtance of this, in which the eye was almoſt entirely turned out of the ſocket by a ſharp-pointed piece of iron puſhed in beneath it. The iron paſſed through a portion of the ſocket,

and

l remained very firmly fixed for the ce of a quarter of an hour; during ich period the patient ſuffered exquiſite n; he was quite blind in the affected ; and the eye-ball being puſhed ſo far as to give reaſon to ſuſpect a rupture the optic nerve, it was doubted whe- r it would anſwer any purpoſe to re- ce it or not. As no diſadvantage, how- r, could occur from a trial being made it, I reſolved to attempt it; and with ch pleaſure and aſtoniſhment I found, removing the wedge of iron, which be- driven to the head was done with dif- ulty, that the power of viſion inſtantly urned even before the eye was replaced. e eye was now put eaſily into the ſocket; d the effects of inflammation being arded againſt, the patient enjoyed very rfect viſion.

A caſe of a ſimilar nature to this is re- rded by a very ingenious practitioner, r White of Mancheſter: In which the e was ſtill more completely diſplaced an in the one I have mentioned, and in which

which the power of viſion was ſcarcel affected *.

As in theſe caſes the attempt to ſave th eye proved ſucceſsful, where the eye-ba remains entire, and is not altogether ſepa rated from the contiguous parts, we ough not to deſpair, however ſevere the in jury in other reſpects may have been Nay we here have evidence of no ma terial inconvenience being experience even from a ſudden extenſion of the op tic nerve. No ſuch caſe therefore ſhoul be conſidered as incurable, till it ha actually proved to be ſo by the power o viſion being found to be entirely loſt afte every endeavour for preventing it has fai ed. After every kind of extraneous ma ter is removed, the eye ſhould be cautiouſl replaced; and with a view to prevent o render moderate the inflammation, whic otherwiſe there would be reaſon to expe to run high, blood-letting, both genera and local, ſhould be adviſed, together wit

* Vide Caſes in Surgery, &c. By Charles White F. R. S. &c.

very ſtrict antiphlogiſtic regimen. At the ſame time, too, light ſhould be excluded from the eye, and it ſhould be kept covered with any of the cooling ſaturnine applications.

When the eye-ball is protruded by a tumor ſituated beneath or behind it, the cure muſt depend entirely on a removal of the tumor. When an abſceſs or a collection of any kind of fluid is attended with this effect, a cure will ſometimes be obtained merely by laying the cyſt which contains the matter ſufficiently open: But when the tumor is of a firmer nature, nothing will prove effectual but the removal of the tumor itſelf.

It is neceſſary in this place to remark, that practitioners are in general too timid, in operating upon tumors of this kind, owing to their near contiguity to the eye; ſo much, that, when a tumor is ſituated entirely within the orbit, a patient is commonly directed rather to allow it to remain, than to ſubmit to an operation. As long as no material inconvenience is experienced from

from ſuch tumors; when they are not likely to degenerate into a worſe nature; and when they appear to remain ſtationary without receiving any additional increaſe, it would ſurely be improper to adviſe a patient to undergo the pain and terror of an operation: But whenever they begin to acquire an additional bulk; when there is any reaſon to ſuſpect that they may ever become cancerous; and eſpecially when they begin to impede the motion of the eye, and to puſh it out of the ſocket; no farther delay ſhould be admitted. In ſuch circumſtances, the removal of the tumor is abſolutely neceſſary for the ſafety of the patient; and as this muſt daily be rendered more difficult, it ought to be immediately attempted.

Even where theſe tumors have acquired a conſiderable bulk, they are more eaſily removed than is commonly imagined. By proceeding cautiouſly they may often be taken out, even where they paſs deep into the ſocket, without hurting the eye. But where the eye has already ſuffered, by being

ng puſhed from its natural ſituation, as thing but the removal of the tumor n prove uſeful, this ought always to be empted, even although there ſhould be ne riſk of the eye being hurt by it: For, ides the injury which ſuch tumors do the eye and other ſoft parts, when y increaſe to any conſiderable bulk, preſſing upon the contiguous bones y very commonly bring theſe like- ſe into a ſtate of diſeaſe. In ſome in- nces, the bones become carious, and pro- ce tedious ulcers; but moſt frequently y ſwell, become ſoft, and on being laid en, inſtead of the uſual appearances of ne, they are found to conſiſt of a clear atinous matter. In this ſtate of the diſ- e no advantage can be expected from irpation, and it therefore ſhould not attempted; but this diſtreſsful ſitu- on may very commonly be prevent- , by the operation being adviſed more rly.

It ſometimes happens, that the eye is ſhed from its ſocket by an enlargement

of the glandula lachrymalis. This forms a kind of tumor, of more difficult management than any other to which theſe parts are liable: We ought not however, even in this caſe, to deſpair of effecting a cure; for even this gland in a ſtate of enlargement has been entirely removed, without injuring the eye-ball; and there will ſeldom be much difficulty in replacing the eye, on the cauſe being removed by which it was puſhed out.

SEC-

SECTION XV.

Cancer of the Eye, and Extirpation of the Eye-ball.

THE eye, like every part of the body, is liable to cancer, a diſeaſe that nnot be cured by any remedy with nich we are acquainted, and which erefore renders the removal of the diſ-ſed part neceſſary, in order to prevent e contiguous ſound parts from becoming fected.

Cancer of the eye is apt to ſucceed to aphyloma: The ball of the eye, after coming enlarged, at laſt protrudes be-ond the boundaries of the ſocket: It ac-uires a firm, and even a hard conſiſtence: iſion is at laſt deſtroyed, and the tumor ommonly acquires a red or fleſhy appear-ice. In ſome inſtances, a yellow gluti-ous matter, but moſt frequently a thin

acrid ichor, is diſcharged from the ſurface of the tumor. For a conſiderable time the patient complains only of heat, or a ſenſation of burning in the ſubſtance of the ſwelling; but at laſt he becomes diſtreſſed with ſevere pains ſhooting through the whole of it, and acroſs the brain to the oppoſite ſide of the head.

In this ſituation, blood-letting, opiates, and the external uſe of emollients, are commonly adviſed, with a view to render the pain moderate; but although we may in ſome inſtances be able to accompliſh this by large doſes of opiates, yet no remedy will prevent the diſeaſe from ſpreading; and as it is always a point of importance to remove cancerous tumors early, we ſhould never heſitate in recommending the operation as ſoon as the diſeaſe appears to be evidently formed.

In Chapter IV. Section VIII. we entered fully into the conſideration of Cancer. I there made it appear, that extirpation of the diſeaſed part, is the only remedy to be depended on; that it often ſucceeds when

men employed early in the diſeaſe; that it muſt neceſſarily frequently fail, when the operation is long delayed; and that practitioners have till of late years been often blameable, in having an ill-founded averſion to this operation, by which their patients have in many inſtances been prevented from ſubmitting to it ſo early as they ought to have done. For a more particular diſcuſſion of this point, I muſt refer to the ſection I have mentioned; but it is here neceſſary to remark, that this general averſion to operate in caſes of cancer, has been carried ſtill farther, when the diſeaſe is ſeated in the eye, than in any other part of the body.

This general objection prevails againſt the extirpation of cancer, wherever it is ſeated, that the diſeaſe is ſo apt to return, that the advantage to be derived from it is ſeldom equal to the pain, trouble, and confinement that ariſe from it. This, I have elſewhere ſhown, is by no means the caſe: But when the diſeaſe is ſeated in the eye, another objection has

been raiſed to it; namely, the hazardous nature of the operation; for, as it is impoſſible, from the depth of the orbit, to ſecure any arteries with ligatures that lie at the bottom of the ſocket, it has been ſuppoſed that much danger muſt occur from this circumſtance alone: And accordingly, although we find the method of extirpating the eye deſcribed in books, excepting by a few practitioners the operation has been very ſeldom performed.

There is no cauſe, however, for this timidity: for although a good deal of blood is ſent to the eye by different branches both of the internal and external carotid arteries; yet, at the place where theſe are divided in extirpating the eye, they are commonly ſo much ramified, that no hazard, ſo far as I know, has ever occurred from this operation; and I have not only done it in different inſtances, but in various caſes I have ſeen it performed by others. It is not the extirpation of a portion of the eye, namely, that part of it which protrudes beyond the orbit, that we are

ow conſidering, but the total removal f the whole eye, when it is altogether iſeaſed. A partial extirpation of the ye is often indeed recommended, chiefly or the reaſon I have mentioned, the dan- er that is ſuppoſed to occur from a deep iviſion of the ocular artery: but when- ver the eye is in a cancerous ſtate, as all he diſeaſed parts muſt be removed in or- ler to render the patient ſafe; as I have endeavoured to ſhow that the eye may be altogether cut out without hazard; and as no advantage can be derived from a por- tion of it being allowed to remain; we ſhould never heſitate in removing the whole. The method of performing the operation is this.

The patient ſhould either be firmly ſeated in a proper light, with his head ſupported by an aſſiſtant; or, what an- ſwers better in every tedious operation, he ſhould be laid upon a table with his head upon a pillow; the moſt convenient poſture not only for himſelf but for the operator. When the eye-lids are diſeaſed,

they ſhould be removed along with the eye itſelf; but whatever part of them is found, ſhould be allowed to remain as a protection to the orbit.

In the courſe of the operation, it is a point of importance to have the palpebræ kept completely ſeparate; for the moſt part this may be done by the hands of aſſiſtants, but in ſome caſes where the ball of the eye is much enlarged, they are more eaſily ſeparated by means of two flat hooks, one of which is repreſented in Plate XIII. fig. 1.

When the eye-ball has become ſo large as to protrude beyond the orbit, the operator will in general be able to lay hold of it with his fingers; but when this cannot be done, a broad flat ligature ſhould be paſſed through the centre of the tumor, in order to ſecure it during the operation. While this is done with one hand, the ſurgeon, with a common ſcalpel in the other, muſt endeavour to ſeparate the whole ball of the eye from the different parts to which it is connected. All the diſeaſed

eaſed parts ſhould be removed; but re ſhould be taken not to injure the nes; for as in ſome parts of the orbit ey are extremely thin, a good deal of ſchief would enſue from their being uch hurt.

On the eye being taken out, the attenon of the operator is neceſſarily direcd to the hemorrhagy: But although in me inſtances this may take place to conſiderable degree, yet this does not ten happen; for in general, the diſarge of blood is ſo inconſiderable as arcely to require the aid of compreſſion put a ſtop to it. But whenever the morrhagy proceeds too far, it may be ſily commanded by preſſure alone; or, piece of dry ſponge being applied to the ouths of the bleeding veſſels, preſſure ay be applied along with it, by ſtuffing e reſt of the orbit with ſoft lint and plying a napkin over the whole, ſo as make it preſs with ſome firmneſs upon e ſponge beneath.

When

When ſponge, however, is employe
ſome attention is neceſſary in applying i
for when ſponge is applied to the mou
of a bleeding artery, it adheres with ſu
firmneſs, as renders a good deal of forc
as well as ſome management, neceſſary
remove it. Before inſerting the ſpong
therefore, a piece of ſtrong waxed pac
thread ſhould be tied to it; by which
may be pulled out when the hæmorrha
is ſuppreſſed.

As ſoon as a free ſuppuration tak
place, the bandage and lint will be eaſi
removed; and the only neceſſary dreſſi
is a pledgit of emollient ointment, to
continued as long as any diſcharge
matter is obſerved from the orbit.

In performing this operation, I ha
directed the common ſcalpel to be em
ployed; and I have no heſitation in ſa
ing, that it is preferable to any inſtr
ment that has yet been propoſed. Di
ferent forms of ſcalpels may be ſeen i
books of ſurgery that have been invente
for this operation, particularly one wit

conſiderable degree of curvature. As this has been in ſome inſtances employed, I have given a view of it in Plate XXI. fig. 1. But it does not anſwer the purpoſe ſo well as the ſtraight ſcalpel; and in using it, we are more apt to injure the bones of the orbit.

The operation I have deſcribed, namely, the extirpation of an eye, is attended with much pain to the patient, and appears to be of a cruel and dangerous nature to bye-ſtanders; ſo that few ſurgeons have reſolution to perform it. It ought in no inſtance to be adviſed where a cure can be accompliſhed by means of a more gentle nature; but when this cannot be done, and when a patient will for certain die in miſery if the eye be not removed, it ought ſurely to be recommended as a means that may afford at leaſt ſome chance of ſafety: For although it will not always prove ſucceſsful, yet we know from experience, that in ſome inſtances lives have been ſaved by means of it, which otherwiſe would probably have been loſt. We ought,

ought, however, to remember, that in every caſe of cancer, extirpation proves, cæteris paribus, moſt ſucceſsful when practiſed early; ſo that it ſhould always be adviſed in cancer of the eye, as ſoon as it is evident that the diſeaſe is completely formed.

SEC-

SECTION XVI.

Of Artificial Eyes.

AS the loſs of an eye is always productive of much deformity, our being in ſome meaſure able to obviate this, not unfrequently a deſirable object; d by the ingenuity of modern tradeſmen, it is eaſily done.

A thin concave plate of glaſs, ſilver, or ld being fitted to the orbit, muſt be loured ſo as to match the other eye as actly as poſſible; and if care is taken render it perfectly ſmooth, it may be roduced beneath the palpebræ, and ed without pain being excited. Of all eſe ſubſtances, however, glaſs is the ſt proper; for it not only can be made reſemble the natural eye more exactly an the others, but it is much more eanly. It has been objected to the

uſe

uſe of glaſs indeed, that it is apt to be broke by blows and other accidents: Of many, however, who I have known uſe this artificial eye, I do not remember an inſtance of any who ever were hurt by it.

An artificial eye may be fitted to any orbit, where the eye has either been ſunk by the evacuation of part of its contents, or where a portion of the eye-ball has been removed: But it ſeldom happens that any advantage is derived from this invention where the globe of the eye has been entirely taken away; for when not ſupported beneath, the artificial eye ſinks too deep into the orbit, and can never be made to fit properly. It is chiefly, therefore, in caſes of hydrophthalmia and ſtaphyloma in which it has been found neceſſary to evacuate a portion of the contents of the eye, or perhaps to remove ſome part of it, that artificial eyes prove moſt uſeful.

SEC

SECTION XVII.

Of CATARACTS.

§ 1. *General Remarks on Cataracts.*

VARIOUS definitions have been given of the term Cataract; ſome of which ſufficiently accurate, but others have her tended to convey an improper idea the nature of the diſeaſe.

Blindneſs, induced by an opake body mediately behind the iris, forms the eaſe we name Cataract; and as we find m diſſection that this opacity is in eve- inſtance ſeated in the cryſtalline lens, in its inveſting membrane, a cataract y with propriety be defined, to be a privation of ſight induced by an opake te of the lens or of its capſule.

The real ſeat of cataract being a late ſcovery, we need not be ſurpriſed at finding

finding very perplexed and contradictory accounts of it in all our ancient chirurgical authors. By ſome it was conſidered as an affection of the internal ſurface of the cornea; others imagined that it was ſeated in the vitreous humour; whilſt by many it was ſuppoſed to be produced by a new formation of a membranous ſubſtance within the cavity of the eye. By ſome this new production was ſuppoſed to be attached to the coats of the eye: But others alleged that it uſually continued looſe, and floated in the aqueous humour. Some writers of eminence, too, appear to have confounded the gutta ſerena with this diſeaſe, the former being often mentioned and deſcribed under the name of the Black Cataract.

The fact, however, is now aſcertained, that cataract, in a pure unmixed form, depends entirely on an affection of the lens or of its capſule; and its appearance indeed is ſo diſtinctly marked, that no practitioner of experience can ever be miſtaken with regard to it: But for the

advantage of beginners, and of others not accuſtomed to this branch of buſineſs, I ſhall, in the firſt place, give a ſhort hiſtory of the riſe and progreſs of the diſeaſe; and ſhall afterwards endeavour to point out ſuch circumſtances as diſtinguiſh it more particularly from ſome other affections of the eye.

Inſtances ſometimes occur, in which cataracts form ſuddenly, and a total loſs of ſight, with complete opacity in the lens, takes place at once without any previous affection. This, however, is rare; but it commonly happens, that the diſeaſe approaches in a very gradual manner, from a ſlight degree of dimneſs, with which it commences, to an entire loſs of vision.

The firſt ſymptom that uſually occurs in cataract is what the patient terms a weakneſs of ſight, and which commonly takes place long before any alteration is perceived in the ſtate of the lens. By degrees this weakneſs, or rather dimneſs of ſight, becomes more conſiderable; and

the patient, being from his feelings led t
ſuppoſe that it is in ſome meaſure produ
ced by duſt or motes floating in the ai
or by ſome opake matter upon the exte
nal ſurface of the cornea, is often employ
ed in rubbing his eyes; and is ſurpriſe
to find that his ſight never becomes clea
er from his doing ſo.

If in this ſtate of the diſeaſe the eye
examined, the lens will be obſerved
have acquired a duſky hue; and inſtea
of being clear and diaphanous, which
naturally is, it will be found to be ſligh
ly opake. By degrees the dimneſs
ſight becomes more diſtreſsful, till
laſt it terminates either in total blin
neſs, or perhaps the patient may be ab
to diſtinguiſh light from darkneſs; b
in the advanced ſtages of the diſeaſe,
can ſeldom diſtinguiſh colours, except
thoſe of the brighter kinds, nor can
find his way in roads where he is not pe
fectly acquainted.

In proportion to the degree of blindn
that takes place, the lens is obſerved

become more and more opake, till at laſt is found to be either entirely white, or of a light gray or pearl colour. In a few inſtances this whiteneſs is confined to a ſmall portion of the lens, and forms a ſmall opake ſpot in ſome particular part of it. In general, however, the whole body of the lens is equally affected.

During the whole courſe of the diſeaſe, the pupil contracts and dilates according to the degree of light in which it is placed; at leaſt this will be always obſerved when the eye is not otherwiſe diſeaſed. Cataracts, however, are often combined with gutta ſerena; in which caſe the pupil is not affected by any degree of light we can apply to it: This, however, does not proceed from the ſtate of the lens, but from the diſeaſed ſtate of the optic nerve.

Cataracts are not commonly attended with pain; but in ſome inſtances it is otherwiſe, and every expoſure to light creates much uneaſineſs. This, however, is always to be conſidered as an accidental

al circumſtance, depending probably upon ſome degree of inflammation at the bottom of the eye, and not as a neceſſary ſymptom of cataract.

I have already obſerved, that cataract has been confounded with other diſeaſes. This however can only happen from inattention; for there is ſcarcely any affection of the eye to which it bears much reſemblance. But in books, we find it has be miſtaken for the gutta ſerena; for, the hypopyon and ſtaphyloma; and it has been confounded with white opake ſpots upon the cornea.

It is eaſily diſtinguiſhed, however, from all of theſe. In cataract, the pupil contracts when expoſed to much light, and an opake body is obſerved behind the iris: whereas in an unmixed caſe of gutta ſerena the pupil remains in a ſtate of dilatation whatever degree of light is applied to it, and no opacity is obſerved at the bottom of the eye: It is diſtinguiſhed from the hypopyon, ſtaphyloma, and white ſpots upon the cornea, by the

ident marks of diſeaſe which in all of eſe take place in the anterior part of e eye, the cornea itſelf; which in all them is opake, and which in the hypyon and ſtaphyloma is commonly elated into a ſmall tumor or protuberance: hereas in cataract, the only ſymptom at occurs, is, blindneſs to a greater or ſſer degree, attended with a white oke ſpot behind the iris, the cornea and ery other part of the eye remaining rfectly ſound. I have already obſerd, that this opacity is found by diſſecon to depend upon a morbid ſtate of the ns. For the moſt part it is the body of e lens itſelf that is diſeaſed; ſo that the pacity is removed, and the eye appears rfectly clear on this being taken out: ut in a few inſtances, the membrane or apſule that ſurrounds the lens is the ſeat the diſeaſe; ſo that the ſame degree of pacity ſtill continues even after the lens removed.—This, however, is not a frent occurrence; but it is ſometimes

met with, and is with ſufficient propriety termed the Membranous Cataract.

It is difficult, or perhaps impoſſible, to aſcertain the proximate cauſe of cataract; but I think it probable, that it conſiſts in ſome degree of obſtruction of the veſſels of the lens, in ſome inſtances induced by external violence, but moſt frequently by ſome internal cauſe, for which we cannot properly account.

The exiſtence of veſſels in the cryſtalline is doubted indeed by many, who imagine that nouriſhment is conveyed to it by the ſmall quantity of fluid that we meet with in the capſule of the lens.—But the fact I conſider as eſtabliſhed, that the lens is ſupplied with veſſels from its capſule, injections having been made to paſs from one to the other, not only in different animals, but in ſome inſtances in the human eye. But whether this could have been demonſtrated or not the exiſtence of veſſels in the lens, is rendered, I think, ſufficiently probable, by a circumſtance I took notice of in the hiſtory

hiſtory of the diſeaſe, namely, the ſudden formation of cataracts, which in a few caſes has been obſerved. I have now met with ſeveral inſtances of this; in one of which the moſt complete degree of opacity took place in the cryſtalline in the courſe of a few hours from the firſt ſenſation of dimneſs; a fact that cannot be ſo readily explained on any other ſuppoſition.

It may be alleged, where the cataract is ſo ſpeedily formed, that the opacity may probably ariſe from ſome affection of the veſſels of the capſule, and not of the lens itſelf. In ſome inſtances this may be the caſe; but in more than one of thoſe to which I allude, the diſeaſe appeared to be fixed in the body of the cryſtalline, and the capſule remained perfectly ſound; for on the lens being extracted, the opacity was entirely removed.

In confirmation, too, of this opinion, of cataracts being probably produced by ſome degree of obſtruction in the veſſels

of the lens, I may remark, that they occu more frequently in women about the ceſ ſation of the menſes than at any other pe riod; and we know that this period is par ticularly productive of obſtructions in o ther parts of the body.

As long as the opinion prevailed o there being different ſpecies of cataracts a variety of means were recommended i the method of cure; but now that th real nature of the diſeaſe is known, ou ſole object is to remove the opacity of th lens; or when this cannot be accompliſh ed, to remove the lens itſelf from the axi of viſion.

In confirmed cataracts of long dura tion, no advantage is ever derived fro any internal medicine; but in the inci pient ſtate of the diſeaſe, before the opa city of the cryſtalline is complete, mer cury has in ſome inſtances proved uſeful When inflammation takes place, blood letting, both general and local; the ap plication of bliſters to the temples, toge ther with a ſtrict antiphlogiſtic regimen

ſhould

ſhould be adviſed; and I have in a few
es derived advantage from the opera-
n of briſk purgatives; but nothing I
e ever tried has anſwered ſo well as
ll doſes of calomel often repeated. Ex-
ctum hyoſcyami, flammula jovis, and
er vegetable productions, have like-
e been celebrated for their efficacy in
aract; but no trials that I have given
m, and I have uſed them all in dif-
ent inſtances, can juſtify the recom-
ndation.

When mercury, and the other reme-
s we may employ, are found to fail,
next object, as I have already obſer-
, is to remove the diſeaſed lens from
axis of viſion: This we accompliſh
one or other of two chirurgical ope-
ions, namely, by preſſing the lens from
natural ſituation in the centre down to
bottom of the eye, an operation com-
nly termed Couching the Cataract; and
t operation which we denominate Ex-
ction of the Lens, by which the diſ-

eaſed

eaſed body is taken entirely out of the eye.

Each of theſe operations has been much employed; ſo that the merits of both ought long ago to have been aſcertained: But although the ſubject is of the higheſt importance, it ſtill remains in a ſtate of uncertainty. By ſome practitioners, couching is preferred; whilſt others conſider extraction of the lens as the only remedy on which we ſhould place any dependence.

The uncertainty in which we ſtill remain upon this point, proceeds, I believe, from this branch of practice having hitherto been for the moſt part in the hands of itinerants: And as gentlemen of the denomination, have uniformly from their firſt outſet in life, adopted one method of operating only, they have very univerſally condemned the other; which they themſelves neither practiſe, nor perhaps underſtand: So that regular practitioners, not being able to determine from their own

experienc

experience, they have in general remain-
upon this point very undecided. But
public appearing now to be convin-
of the propriety of intruſting this, as
ll as every other operation of import-
ce, to eſtabliſhed ſurgeons of reputa-
n, opportunities will thus be afforded
determining the point in queſtion by
periment; the only means by which
y degree of certainty can be obtained.
In proſecuting the conſideration of this
ject, I ſhall endeavour to point out as
early as poſſible the reſult of my own
ſervations upon it, together with that
ſome of our beſt employed ſurgeons.
ith this view, I ſhall firſt deſcribe the
eration of couching; and after conſi-
ring the different ſteps of the operation
extracting the cataract, I ſhall attempt
draw a juſt compariſon of the merits
the two.

§ 2. *Of*

§. 2. *Of* Couching, *or* Depression *of th* Cataract.

I have already obſerved, that the ope ration of couching conſiſts in preſſing th cataract or diſeaſed cryſtalline lens fro its natural ſituation in the centre down t the bottom of the eye. By this means th opacity producing the diſeaſe is remove from the axis of viſion; and although th ſight will never be ſo perfect as it wa before the lens became opake, if the ey is otherwiſe ſound it will be quite ſuffi cient for the common purpoſes of life.

In the anatomical deſcription of th eye, which makes the ſubject of the fir part of this chapter, we have ſeen, tha the lens is placed behind the pupil, whe it is lodged in a ſlight depreſſion of th vitreous humour, to which it is attache by a capſule, formed by a portion or l mella of the tunic which includes the v treous humour itſelf. In couching, th

len

is ſeparated from its capſule; and be-
preſſed down behind the iris, if the
ration ſucceeds, it either remains there
ing life, or is diſſolved in the aqueous
mour in which it is lodged.

efore we proceed to this operation,
re are ſome circumſtances which par-
llarly require our attention; the moſt
erial of which are, the degree of opa-
which occurs in the lens, and the ſi-
ion of the eye with reſpect to other
aſes.

is a fact well known to practitioners,
no operation can be performed upon
eye, but with the riſk of inducing in-
mation; a ſymptom that proves te-
us, or otherwiſe, according to the con-
ution of the patient, and other circum-
ces of the caſe. This points out the
priety of proceeding with caution, and
attempting no operation on this organ,
abſolutely neceſſary for the welfare
omfort of the patient. Where a pa-
t is rendered ſo blind by cataracts in
h eyes, that he cannot conduct him-
ſelf

ſelf in the common occurrences of life, we ſhould not heſitate in adviſing an operation for his relief. In ſuch circumſtances, any riſk of his ſuffering from inflammation is more than counterbalanced by the advantages he may derive from the operation. But when one eye only is affected, and where therefore the patient enjoys a perfect uſe of the other; or where even both eyes are diſeaſed, if the opacity of the cryſtallines is not ſo conſiderable as to prevent the patient from managing his ordinary buſineſs; or if it does not deprive him of his ſight in any remarkable degree; in any of theſe circumſtances, a prudent practitioner will rather avoid an operation, and will adviſe it to be delayed as long as viſion remains tolerably perfect.

The ingenious Dr Richter of Gottingen is indeed of opinion, that the exiſtence of cataract in one eye is particularly apt to produce a ſimilar affection in the other, and therefore he adviſes the cryſtalline to be removed as ſoon as it becomes

comes entirely opake, whether it is diſeaſed in the other eye or not. The propriety, however, of this advice can be only determined by farther obſervation: But it often happens, that together with an opake ſtate of the cryſtalline, the eye is in other reſpects ſo much diſeaſed, as to afford no hopes of viſion being reſtored by a removal of the cataract: In which caſe, as no advantage could be derived from an operation, it ought not to be recommended. This is particularly the caſe in the hypopion, in the gutta ſerena, and in every affection of the eye attended with an opake ſtate of the cornea.

Writers on this ſubject mention another reaſon, which they think ſhould have ſome influence in determining the propriety of operating in all caſes of cataract. It has very univerſally been ſuppoſed, that a cataract ought to be in a particular ſtate, in order to inſure ſucceſs from an operation; inſomuch that we are adviſed never to operate unleſs this ſtate of the diſeaſe is found to prevail. The ſtate to which I allude, is a ſuppoſed ſtate of maturity, which

which it is believed every cataract will ſooner or later arrive at, and which is ſaid to be clearly and evidently pointed out by certain appearances of the opake cryſtalline.

It is true, that both in the operation of couching and extracting the cataract, the lens is ſometimes found to be partly ſoft and in part very firm, and in a few caſes it is even perfectly fluid; a circumſtance commonly conſidered as unfavourable: But although this may have firſt ſuggeſted the idea of the unripe ſtate of a cataract, as it is termed, yet no advantage has hitherto been derived from the diſtinction; for notwithſtanding a variety of ſigns have been mentioned, by which the real ſtate of a cataract is ſaid to be evidently marked, yet it does not appear to be ſupported by experience: On the contrary, we often find that a cataract is of a firm texture, that was previouſly ſuſpected to be ſoft; and vice verſa.

Nothing, indeed, can render it more obvious, that this idea of the mature ſtate of

o:a cataract is ill-founded, than the v:ety of opinions that prevail reſpecting it. For while by ſome it is ſaid that this ſ:e of the diſeaſe is indicated by a pure v:tte or milky appearance, others aſſert, t:t a light gray or pearl colour is the on- l:certain mark of it. Now, the fact is, t:t the real ſtate of a cataract can ne- v: be known from its colour; and the l:t informed practitioners will allow, that n:advantage is to be derived from this :ans of diſtinction.

The idea of a cataract being more ripe :one period of the diſeaſe than at an- :ner, originated, as I have obſerved :ove, from the cryſtalline being in ſome :ſtances found to be fluid, which gave :uſe to ſuſpect that the firſt effect of :cataract is to induce a ſoftneſs of the :ns, and that this ſoft or fluid ſtate of it gradually altered by the progreſs or :ntinuance of the diſeaſe, by which it :ſuppoſed to acquire a firm conſiſtence, :hen it is conceived to be thoroughly :pe.

This opinion, however, of the firſt effect of a cataract upon the lens, is equally ill-founded with the idea I have mentioned, of the real ſtate of the diſeaſe being to be diſtinguiſhed by its external appearance; for we know from experience, that cataracts are often of a firm texture from the beginning. From my own obſervation, indeed, I would ſay, that the moſt frequent effect of cataract upon the lens is to produce a preternatural degree of hardneſs through the whole of it; as, for the moſt part, an extracted opake cryſtalline is of a firmer texture than it is ever found to be when healthy and tranſparent.

We are, therefore, to conclude, with reſpect to this circumſtance of the ripe or unripe ſtate of a cataract, that in the treatment of the diſeaſe no advantage is to be derived from any thing we yet know concerning it. In the common acceptation of the term, indeed, the word ripeneſs has in this reſpect no determined meaning affixed to it: I would therefore

propoſe,

oſe, that inſtead of being employed
gnify the *appearances* of a cataract, it
ld be applied only to expreſs the *ef-*
that ariſe from it. In this manner, the
might ſtill be retained with proprie-
for we might very properly ſay that
taract is ripe when the patient is ren-
d entirely blind by it, and when there-
it is ready for an operation; and, on
contrary, that the diſeaſe is ſtill in
unripe ſtate as long as viſion is not
lh impaired by it.

s the ſtate or conſiſtence of a cata-
, is much inſiſted upon by almoſt all
iors who have written upon it, I jud-
it proper in this manner to enter on
rticular conſideration of the ſubject:
l, upon the whole, this concluſion I
k may be drawn from what has been
, that in determining upon the pro-
ty of operating, we are never to place
dependence on the appearance of the
; and that we are to be ſolely direct-
by the effects produced by the cataract,
by the ſtate of the eye with reſpect

to other diſeaſes. As long as viſion remains tolerably perfect, whether in both or only in one eye, for the reaſons I have given, a prudent practitioner would rather avoid the operation: But, when the ſight becomes much impaired, if the cornea is found to be tranſparent, and if the pupil admits of full dilatation and contraction according to the degree of light to which it is expoſed, we ſhould not heſitate in adviſing an operation as the only effectual means of relief. And when the operation of couching is reſolved upon, the following is the method of doing it.

As it is of importance in this as well as in every operation upon the eye, to guard againſt inflammation, nothing ſhould be omitted that can in any way tend to prevent it: The patient ſhould be confined, for ſeveral days before the operation, to a low regimen: He ſhould loſe ten or twelve ounces of blood, and even more if his ſtrength admits of it, and two or three doſes of ſome cooling laxative medicine

cine ſhould be exhibited at proper in-
rvals.

An apartment ſhould be fixed upon that
perfectly light: but during the opera-
on the ſunſhine ſhould not be admitted;
r by the irritation which it excites, the
e is prevented from being kept ſo ſteady
ven with a ſpeculum as it otherwiſe may
. A north expoſure ſhould therefore be
referred.

The only apparatus to be provided for
his operation is, a ſpeculum of a proper
onſtruction, and of a ſize adapted to that
f the eye; and an inſtrument termed a
eedle, for the purpoſe of depreſſing the
ataract. Different forms of the needle
re repreſented in Plate XV. and in Plate
XIV. are delineated, different views of
he moſt uſeful ſpeculum that has yet been
nvented.

As it is of much importance to have
he eye properly fixed during the whole
ourſe of the operation, and as this can-
ot be done effectually in any other man-
er than with a ſpeculum exactly fitted to

the eye, every operator ſhould be provi-
ded with ſeveral ſizes of this inſtrument.

The beſt needle for this operation is that of a flat form, repreſented in Plate XV. fig. 1.

The patient ſhould be placed upon a low ſeat with his face towards the window, and the ſurgeon, upon a chair conſiderably higher, ſhould be ſeated directly before him: An aſſiſtant ſtanding behind muſt be directed to ſupport the patient's head, which is moſt effectually done by placing one hand under the chin, and the other upon the forehead: And in order to prevent any interruption during the operation, the hands of the patient ſhould be properly ſecured by an aſſiſtant on each ſide.

During the operation, it is of much importance for the ſurgeon to have his hand firmly ſecured: For this purpoſe, nothing proves ſo effectual as a proper reſt being provided for the elbow. The elbow ſhould therefore be placed either upon a table or on the knee of the operator raiſed to ſuch

ſuch a height that it may be nearly on a line with the eye of the patient. Surgeons in general truſt to the hand being properly ſecured by the ring and little fingers reſting upon the cheek or temple of the patient: But this ſeldom proves ſufficient for the perfect ſteadineſs required in every operation upon the eye; and whoever will make trial of the mode I have mentioned of fixing the elbow, will find it preferable. It is proper, indeed, that any advantage to be derived from reſting theſe two fingers upon the cheek ſhould be likewiſe laid hold of; but this alone ought never to be depended on.

An ingenious author, who has late written on the cataract, has communicated ſome valuable practical obſervations to the public *. His method of giving ſupport and ſteadineſs to his hand during the operation of extracting the cataract, and

* *Vide* A Treatiſe on the extraction of the Cataract, by Frederick Biſchoff, F. M. S. Oculiſt to his Majeſty in the Electorate of Hanover, and to her Majeſty in England.

the ſame obſervations I may remark apply with equal propriety to that of couching, is to preſs the upper part of the arm and elbow of that hand with which he performs the operation, ſtrongly againſt his own breaſt and ribs, and to lean his little finger about an inch from the outſide of the eye on the cheek-bone of the patient, at the ſame time that he retains his breath, and remains as much as poſſible in that ſituation, till the inciſion of the cornea is finiſhed.—He has alſo invented a chair for the purpoſe of fixing the head of the patient, which he has uſed for many years with much advantage. He very properly obſerves, that in the uſual method of fixing the head, by preſſing it againſt the breaſt of an aſſiſtant, that the leaſt motion, even what is occaſioned by the aſſiſtant drawing breath, muſt occaſion a correſponding motion of the head of the patient.—The chair that he has invented, is repreſented in Plate XXVIII. and it appears to be well calculated for the purpoſe for which it is intended.

Whether

Whether the patient is seated on this chair, or in the manner I have advised above, the assistant is now to raise the upper eye-lid with the fingers of his left hand; and the surgeon applying the groove in the upper part of the speculum, Plate XIV. fig. 1. in such a manner that it may receive the edge of the eye-lid, the opening or circle formed by the rim of the speculum is to be prefled upon the ball of the eye, till the transparent cornea, and nearly about an eighth part of an inch of the sclerotica, is protruded; by which means, if a steady and equal prefsure is continued upon the eye, it will be kept firmly fixed without any injury being done to it, at the same time that a sufficient quantity of the ball will be left uncovered by the speculum for the purpose of the operation.

I am at present supposing that the operation is to be performed upon the left eye. For this purpose, the patient being seated in the manner I have directed, the speculum being applied and secured

by the ſurgeon's left hand, and the ſurgeon himſelf being ſeated, with the elbow of his right arm fixed at a proper height, he muſt take the couching needle in his right hand, and having fixed it, as we do a pen in writing, between the thumb and fore and middle fingers, while the ring and little fingers are made to reſt upon the cheek or temple of the patient, the point of the inſtrument muſt now be made to paſs the external canthus of the eye; and being brought nearly into contact with the ſclerotica, it ſhould be quickly plunged through this coat ſomewhat below the centre of the eye and about one-tenth of an inch behind the iris. In Plate XVII. fig. 1. is delineated a needle paſſed into the eye; by which a better idea is given of the operation than can be done by any deſcription.

In order to avoid the iris, the inſtrument ſhould be introduced with its flat ſurface towards this membrane, and ſhould be carried forward in a ſtraight direction till the point of it is diſcovered behind the

the pupil, as is repreſented in the figure I have mentioned. By depreſſing the handle of the needle, the point of it will be raiſed, and the flat ſurface of it being turned downwards, it muſt now be puſhed into the upper part of the cryſtalline, when the operator, by elevating the handle, muſt endeavour to carry the lens upon the point of the inſtrument down to the bottom of the eye; which will be inſtantly diſcovered, on the ſurgeon obſerving through the pupil that the cataract diſappears, and by the patient diſcovering more light than he has for ſome time been accuſtomed to.

Were we certain that the lens would continue at the bottom of the eye, the needle might now be withdrawn, and the operation would be finiſhed: But as we know from the anatomy of the eye, that there is a portion of the aqueous humour lodged between the vitreous humour and the iris; as it is into this part of the aqueous humour that the cryſtalline is depreſſed; and as this humour is of a conſiſtence

ſiſtence too thin for preventing the action of the muſcles of the eye from raiſing the lens again on the preſſure of the inſtrument being withdrawn; we need not be ſurpriſed at the operation being frequently found to fail on being finiſhed in this manner.

Inſtead of this, on the cryſtalline being preſſed to the bottom of the poſterior chamber, it ſhould be ſlowly carried on the point of the inſtrument towards the outer and back part of the eye; a movement which is eaſily accompliſhed, by the operator raiſing his hand ſo as to elevate the handle of the needle, at the ſame time that he makes it paſs ſomewhat outward over the cheek. By this means, the cryſtalline is to be partly lodged below the vitreous humour; which being of a firm conſiſtence, very commonly prevents it from riſing again; and being brought towards the external canthus of the eye, if it ſhould afterwards be forced up by the action of the muſcles, not being oppoſite to the pupil, the paſſage of light to the retina

etina will not be obſtructed, and viſion will accordingly be ſcarcely more affected than if the cataract had remained at the bottom of the eye.

As ſoon therefore as this movement is accompliſhed, the needle ſhould be withdrawn; and there being now no farther uſe for the ſpeculum, it ſhould likewiſe be taken off: But as it is of importance to have the eye properly fixed during the whole courſe of the operation, the ſpeculum ſhould not be removed till it is finiſhed.

On the inſtrument being taken away, it is uſual to try what effect may be expected from the operation, by preſenting different objects to the patient: But although no harm enſues from ſlight trials of this kind, they ſhould never be carried far; for they may do miſchief by tending to promote inflammation, while no real advantage can ever ariſe from them.

After the operation, a compreſs of ſoft lint, ſoaked in a weak ſaturnine ſolution, ſhould

ſhould be lightly applied over the eye; and this being retained by the bandage, Plate XXIX. fig. 1. the patient ſhould be confined in a dark apartment and kept on low diet as long as there is any riſk of much inflammation: With the view, too, of preventing inflammation, a doſe or two of a briſk purgative may be exhibited; and, when neceſſary, blood ſhould be taken from the temporal artery, from the jugular vein, or from the neighbourhood of the eye with leeches.

The eye ſhould be looked at daily, that the real ſtate of it may be known; but the patient, for a conſiderable time, ſhould be kept in an obſcure light, with his eyes properly protected.

For the moſt part, we diſcover in the courſe of a few days whether the operation is to ſucceed or not, but in ſome inſtances the patient remains for a conſiderable time perhaps equally blind as before, and yet gradually recovers the power of viſion afterwards, ſo as to diſtinguiſh objects with as much exactneſs as

if the operation had proved ſucceſsful
m the firſt. This I ſuppoſe to happen
m ſome degree of inflammation being
oduced in the capſule of the lens, by
e violence done to it in the operation,
which cannot be ſpeedily removed.

On removing the coverings from the
e, if the cataract is not diſcovered,
e object of the ſurgeon is completed;
t if it has again got into its uſual ſituaon, after a farther delay for the purpoſe
allowing the inflammation induced by
e firſt operation to ſubſide, another
al ſhould be made with it: And it freently happens, that a ſecond or third
tempt proves ſucceſsful when the firſt
s entirely failed. This ariſes, however,
a great meaſure, from the circumſtance
which I have already adverted, the
edle being withdrawn immediately on
e lens being preſſed to the bottom of
e eye; for this being done, it is in geral ſuppoſed that the operation is finiſh-
. I have endeavoured, however, to
ow, that this is by no means the caſe;

and

and that the cataract will ſeldom riſe again if it be preſſed towards the external canthus of the eye, and gently puſhed beneath the vitreous humour.

Thoſe who have not operated in this manner, will perhaps object to it, that by forcing the lens into the vitreous humour, an unneceſſary violence is thus done to this part of the eye, by which it muſt be ſo much injured, as to have ſome influence on the ſucceſs of the operation. This, however, is not found by experience to be the caſe; for I have often done the operation in this manner, and I never obſerved any inconvenience ariſe from it. We ſhould not wantonly hurt the vitreous humour; but we know that it is often much more materially injured in extracting the cataract, and with little apparent detriment to the eye, than it can ever be in the operation of couching. Thus it often happens, in extracting the lens, that a conſiderable portion, or even the whole, of the vitreous humour, is diſcharged, and yet the operation proves

perhaps

erhaps as ſucceſsful as if no ſuch occur-
nce had taken place. This is an acci-
ent, indeed, that every operator would
ther wiſh to avoid; but it ſhows clearly,
at no injury of importance can be done
viſion by the practice I have advi-
d, of lodging the cataract in the opera-
on of couching, partly beneath, or e-
en entirely in the ſubſtance of the vi-
eous humour.

The operation I have deſcribed is ſup-
oſed to be done, as I have already obſer-
ed, upon the left eye; for which purpoſe
e right hand of the operator muſt be
mployed: But in performing upon the
ght eye, if the needle is to be entered
the uſual way, from the outer or exter-
al canthus of the eye, it muſt either be
one with the left hand of the ſurgeon,
r, if he wiſhes to uſe his right-hand, he
uſt either ſit or ſtand behind the patient,
hen, by ſupporting the head upon his
reaſt or upon his knee, he may in this
anner accompliſh his purpoſe. This
ode of operating upon the right eye has

been frequently practiſed even by ſurgeons of eminence, but it is extremely awkward; and beſides, the operator can never have ſuch a full command of the eye when he ſits or ſtands behind, as when placed before the patient. Few ſurgeons, however, are ſo alert in uſing their left hand, as to be able to perform with it this very nice operation; ſo that with the uſual inſtruments there is no other alternative than that of doing it from behind. But in Plate XVI. fig. 4. and 5. there is delineated a form of needle, by which the operation may be done with eaſe and ſafety on the right eye with the right hand of the ſurgeon, whilſt he is ſeated before and oppoſite to the patient. Only in this caſe, inſtead of entering the inſtrument at the uſual place, by puſhing it inwards from the external canthus of the eye, it muſt be entered at the internal angle and puſhed outwards, as is repreſented in Plate XVIII. fig. 1. In every other reſpect the operation is to be conducted as I have already directed; only,

only, the cataract, inſtead of being carried to the external canthus of the eye, muſt in this caſe be drawn by the point of the needle towards the noſe. In this manner the operation may be done upon the right eye by any ſurgeon who can perform it upon the left; an improvement that many will judge to be important.

As the operation of couching is very univerſally performed without the aſſiſtance of a ſpeculum, it may be conſidered as an affectation of ſingularity to recommend one. In anſwer to this, I muſt obſerve, that although the cataract may be depreſſed without the uſe of a ſpeculum, it may be done more perfectly, and with more eaſe both to the patient and ſurgeon, when a ſpeculum is employed, than when it is not. By means of the ſpeculum, delineated in Plate XIV. as well as with that in Plate XXII. fig. 5. the eye may be very firmly fixed, which allows the operator to manage the needle with more eaſe than can otherwiſe be done.

It has been commonly objected to the uſe of a ſpeculum, that it does not ſecure the eye ſufficiently; and that it always proves detrimental, by exciting inflammation over the eye-ball. This obſervation, I believe, is well founded with reſpect to the inſtrument in ordinary uſe, of which a delineation is given in fig. 3. Plate XII. But it does not apply to either of the others; which, when properly fitted to the ſize of the eye, ſecure it exactly; and when finely poliſhed, they are never productive of any inconvenience.

Some practitioners, ſenſible of the impoſſibility of fixing the eye properly in the manner commonly attempted with the fingers alone, and finding the common ſpeculum inſufficient, have propoſed another inſtrument for this purpoſe: It conſiſts of a ſharp ſpear or prong, fixed in a handle, with a croſs flat bar near the point, as is delineated in Plate XII. fig. 2.

This inſtrument has long been employed in ſome parts of the Continent: It is uſed by puſhing the point of it through the

the ſclerotic coat on the ſide of the eye oppoſite to where the needle is to be entered; and it is prevented from penetrating far, by the croſs-bar near the point. In this ſituation, it is ſecured by an aſſiſtant on one ſide of the patient; and the eye-lids being ſeparated by the ſurgeon himſelf, aſſiſted by the perſon behind who ſupports the head, the eye may in this manner be fixed in ſome degree, but never with ſo much eaſe and certainty as with either of the ſpeculums I have mentioned.

Needles of various forms and ſizes have been uſed in this operation; but the flat needle, fig. 1. Plate XV. anſwers the purpoſe better than any that I have ever tried. It ought not to be broader than this, otherwiſe it makes too large a cut in the coats of the eye; and if much narrower, it does not ſo readily carry the lens along with it. The round needle, fig. 2. of the ſame Plate, has been much employed by many itinerants; but I have not found, upon trial, that it anſwers ſo well as the

other. After piercing the cataract, it parts with it too eaſily: and beſides, it enters the coats of the eye with more difficulty, and it cannot be ſo eaſily moved when introduced as the other; which being broad in the cutting part of it near the point, it forms an opening in the tunica ſclerotica ſomewhat larger than the diameter of the reſt of the inſtrument, which admits of its being afterwards eaſily moved in every direction.

It has been objected to the flat needle, that by its breadth it is more apt than the round one to hurt the iris; but with the precaution I have mentioned, of introducing it with the flat ſurface towards this membrane, there can never be any hazard of this. The flat part of the needle may indeed be made broader than is neceſſary, and this I believe is very commonly done; by which the opening made with it is too large; more irritation is thus excited; and when broad near the point, it does not ſo readily penetrate the lens as when of a narrower form. The needle

edle delineated in Plate XV. fig 1. is in ery reſpect of a proper ſize. Fig. 3. reeſents a needle with a ſmall degree of rvature, by which I have ſometimes ought that the cataract may be more ſily depreſſed than with a ſtraight needle; ut I have not yet uſed it ſo frequently as be able to ſpeak deciſively concerning . In piercing the eye with it the conex ſide of the curve muſt be towards the is, as this membrane might probably be jured were it introduced in any other manner.

In deſcribing the operation, I deſired hat the needle might be entered at one de of the eye, by paſſing it through the clerotic coat at the diſtance of one-tenth f an inch from the iris. And I likewiſe bſerved, that it anſwers the purpoſe better by introducing it ſomewhat below the entre of the eye, than if entered, as is uſually done, in a line with the centre of he pupil. It ought not, however, to be far below this point. The twelfth part of an inch is fully ſufficient; for when the

needle is introduced near the bottom of the eye, the cataract is not ſo eaſily depreſſed with it.

It has been ſaid by ſome, that the operation may be performed, not only with more eaſe, but with more ſafety, by introducing the needle through the tranſparent cornea, and after paſſing it through the pupil, to puſh down the cataract with the point of it to the bottom of the eye. This propoſal, however, will never probably be generally admitted, for it is impoſſible in this manner to depreſs the lens ſo eaſily as when the needle is entered in the manner I have directed, while it can ſcarcely be done without injuring the iris.

§ 3. *Of*

§ 3. *Of* EXTRACTING *the* CATARACT.

THE operation of couching, or depreſ-ing the cataract, had been lo g practiſed, nd was conſidered as the only means by vhich an opake cryſtalline could be re-noved, till the year 1737 when an emi-ent oculiſt of Paris, Mr Daviel, firſt pro-oſed and practiſed the method of remo-ing it by extraction.

It is true, that ſeveral years previous to his period, Mr Petit propoſed to make n opening through the tranſparent cor-nea, for the purpoſe of removing the lens when forced into the anterior chamber of he eye, either by external violence, or when puſhed through the pupil in the ope-ration of couching, an occurrence which as ſometimes happened: but, being con-idered as extremely hazardous, it was arely practiſed; nor was it ever ſuppo-ed to be proper in any other ſtate of the liſeaſe, till Mr Daviel, about the time I have

have mentioned, put it frequently in practice, in preference to the operation of couching. By ſome the merit of this operation has been attributed to our countryman Taylor, a famous itinerant of theſe times; but this will not be admitted by any who have paid attention to the hiſtory given of it by thoſe who had the beſt opportunities of becoming acquainted with it.

This operation conſiſts in an opening being made through the tranſparent cornea, of a ſufficient ſize for admitting the paſſage of the lens after it has paſſed through the pupil into the anterior chamber of the eye. The operation itſelf was nearly if not exactly the ſame when practiſed at firſt by Mr Daviel as it is at preſent; but the method of doing it then was more difficult and tedious, by a greater number of inſtruments being uſed in it than are now found to be neceſſary. At that period knives of different forms were employed; as alſo, ſciſſars, forceps, a lancet concealed in a canula for open-

the capſule of the cryſtalline, as well many others. In the preſent impro- ſtate of this operation, the only in- uments that are uſed are, a ſpeculum fixing the eye; one or other of the ves, Plates XVI. XXII. and XXIX. ſmall ſcoop, Plate XVI. fig. 4. and a blunt-crooked probe, Plate XVIII. . 1.

In proceeding to this operation, the pa- nt ſhould be placed in the ſame kind of ht, and ſecured in the ſame manner as ave directed for the operation of cou- ing. The ſurgeon ſhould likewiſe be ted in the ſame manner before the pa- nt, and ought to reſt his elbow either on a table, or upon his knee raiſed to h a height as to bring his hand nearly a line with the pupil.

This being done, if the operation is to be rformed upon the left eye, the ſpeculum uſt be applied in the manner I have di- ted in the operation of couching, and uſt be preſſed upon the eye with the left nd of the operator with as much firmneſs

as

as is neceſſary for ſecuring the eye; bu more than this ſhould be avoided, as it no only gives more pain, but is apt to pre the cornea into too near contact with th iris; by which the latter is in great ri of being injured in the ſubſequent ſteps o the operation.

The ſurgeon is now to take the knife be tween the thumb and fore and middl fingers of his right hand, allowing nearl an inch to project paſt the extremity o his middle finger; and the point of i being brought in contact with the luci cornea, it muſt be made to penetrate thi coat at the diſtance of the ſixteenth par of an inch or thereby from the iris, in line running from the external canthus o the eye directly acroſs the centre of th pupil, as is repreſented in Plate XVII fig. 2.

The convex ſurface of the knife being ſtill kept next to the iris, it muſt be car ried ſlowly forward in this direction, til the point of it reaches the other ſide o the eye directly oppoſite to where it en-

tered

ed; and muſt here be puſhed out till
arly a quarter of an inch of it is free-
through the cornea. The operator is
w, in a gradual manner, to form a ſe-
lunar cut in the under part of the cor-
a, by moving the knife downwards in
h a manner, that all that portion of
cornea lying between the point at
ich it entered and that at which it paſ-
out, may be divided at an equal di-
nce from the iris; as is repreſented in
ate XVII. fig. 4. In this manner an
ening will be formed ſufficiently large
r the paſſage of the cataract.

While this ſemilunar cut is forming in
e cornea, the preſſure of the ſpeculum
on the eye-ball ſhould be gradually leſ-
ned, otherwiſe the vitreous humour is
t to be preſſed out on the inciſion being
mpleted. We are adviſed indeed by
me to remove the ſpeculum altogether
the knife being paſſed out at the oppo-
e ſide of the eye; for which purpoſe
ey leave an opening on one ſide of the in-
ſtrument,

ſtrument, to admit of its being taken o
as is repreſented in fig. 3. Plate XI
But with an operator accuſtomed to th
uſe of the ſpeculum, there is no neceſſit
for this precaution; for a degree of pre
ſure may be made with it ſufficie
for fixing the eye, without any riſk
forcing out the vitreous humour; and b
keeping the eye fixed to the laſt, we a
enabled to form the inciſion with mor
exactneſs than can poſſibly be done whe
the ſpeculum is removed early in th
operation. I have ſeen it indeed ofte
done in this manner; but as ſoon as th
eye has loſt the ſupport of the ſpeculum
the preſſure of the knife is apt to dra
the eye-ball too far down towards th
under edge of the ſocket, by which
ſmaller ſegment of a circle is commonl
formed than is ſufficient for the paſſage o
the lens; for by the eye being draw
ſuddenly downwards on the ſpeculum be
ing removed, the under part of the inci
ſion is almoſt always formed at too grea

diſtance from the iris, and is thus made maller than it ought to be.

When the eye-ball has been too forbly compreſſed by the ſpeculum, the caract, together with all the aqueous humour, and a conſiderable portion of the itreous, are very commonly preſſed ſudenly out: But when this part of the opetion is duly attended to, nothing but ie aqueous humour paſſes out.

As ſoon as the inciſion is completed, ie operator muſt lay aſide the knife; and aving lifted the flap formed in the corea with the flat crooked probe, Plate VIII. fig. 5. he muſt with much caution afs the point of this inſtrument through ie pupil, in order to ſcratch an opening the capſule of the lens, or this may be one with the inſtrument repreſented in late XXIV. fig. 2. & 3. This being acompliſhed, the cataract muſt be forced out y a very equal though moderate preſſure pplied with the ſpeculum over the globe f the eye.

It happens indeed in ſome inſtances that a good deal of preſſure is required to force the cataract out: But this always proceeds from ſome fault in the previous ſteps of the operation, almoſt univerſally indeed from the inciſion in the cornea being ſmaller than it ought to be, by which the lens is with difficulty forced through the pupil; or if it is made to enter the anterior chamber of the eye, it does not paſs through the opening in the cornea ſo readily as it ought to do.

In this ſituation, it is the common practice to force out the lens by repeated applications of preſſure. This, however, ought not to be imitated; for nothing proves more deſtructive to the eye than violence applied to it in this manner: For beſides the loſs of the vitreous humour with which it is commonly attended, the iris is often materially hurt, and much inflammation induced by it.

When the lens cannot be eaſily removed from the anterior chamber of the eye by means of a ſcoop, and in every in-

ance where it is with difficulty forced rough the pupil, the operator, inſtead perſiſting to employ much preſſure, ould rather enlarge the opening in the ornea, uſing for this purpoſe a pair of all probe-pointed ſciſſars; and this be- g done, the operation muſt be finiſhed the manner I have already pointed ut.

With a view to render the paſſage of ne lens as eaſy as poſſible, the pupil ould at this part of the operation be in ne ſtate of the moſt perfect dilatation; or which purpoſe, after the inciſion of ne cornea and the opening of the cap- le of the cryſtalline are completed, a ark cloth or curtain ſhould be placed be- veen the eye and the light, to be remo- ed on the lens paſſing out; or the patient ay be placed with his back to the win- ow.

In a few inſtances of cataract, the cauſe f opacity is found to be, not in the lens ſelf, but in its capſule. When this is ne caſe, the extraction of the cataract

anſwers no good purpoſe, as the opacity is equally ſtrong after as it was before the operation. Some authors have therefore in ſuch circumſtances adviſed the opake capſule to be removed with forceps and other inſtruments paſſed through the pupil; but this can never be accompliſhed without much riſk of injuring the iris and other parts of the eye: So that it is more likely to do harm than good. For this reaſon we ſhould rather truſt to time and an antiphlogiſtic regimen, for the removal of the opacity. No miſchief can enſue from this; and I have known inſtances of cures being performed by it: whereas the contrary practice, ſo far as I have yet heard, has never in any caſe effected a cure; and it has frequently deſtroyed the eye entirely.

When, again, the operation is to be performed upon the right eye, if the ſurgeon wiſhes to do it in the uſual way with the knife commonly employed, he muſt uſe his left hand; but as few practitioners are able to perform this nice operation with the left

ft hand with ſufficient ſteadineſs, I have lineated a knife, fig. 2. Plate XVI. which it may be eaſily done with the ght hand, while the patient and ſurgeon re ſitting oppoſite to each other in the anner I have directed: only, in this ſe, the point of the knife muſt be en- red at the internal canthus of the eye, nd muſt then be puſhed outwards to the ppoſite ſide, inſtead of being introduced t the external angle and carried towards ne noſe.

The operation being finiſhed, the eye hould be immediately covered with a ompreſs of ſoft lint, or old linen, ſoaked n a weak ſaturnine ſolution, to be retain- d by the bandage, fig. 3. Plate XXIX. r any other that does not compreſs the ead much, or keep it too warm. For everal days after the operation, no light hould be admitted to the patient's apart- nent. A very low diet ſhould be adviſed: And the eye being very apt to inflame, repeated blood-lettings are frequently re- quiſite from the jugular vein or temporal artery.

As this operation indeed is more apt to fail by the ſubſequent inflammation upon the cornea than from any other cauſe, it requires our utmoſt attention to guard againſt it: And as the healing of the inciſion depends in a great meaſure on the eye being kept at reſt, every cauſe of irritation ſhould be avoided. When the operation ſucceeds, the cure of the inciſion is in general completed in fourteen or fifteen days; but in ſome inſtances the cut continues open for ſeveral weeks.

In deſcribing the different ſteps of the operation, I adverted to a circumſtance that frequently happens when every part of it is not done with caution, and which commonly proves very alarming; namely, the loſs of a conſiderable part, or perhaps the whole, of the vitreous humour. By this the eye becomes flat, and inſtantly ſinks within the orbit: But although it ought to be guarded againſt with the niceſt attention, it does not always prevent the ſucceſs of the operation. I have known

nown indeed ſome inſtances of the eye emaining ſunk and uſeleſs after this ac- ident, but moſt frequently the globe be- ins ſoon to fill again, and in the courſe f two or three weeks it has commonly equired its uſual bulk.

Whether or not this takes place from a egeneration of the vitreous humour, or nerely from the ball of the eye being all lled with an aqueous ſecretion, I will not retend to ſay. The latter is the common pinion; but why may not the vitreous umour be renewed as readily as the a- ueous? I am inclined to think that a re- ewal of the one happens as readily as that f the other, from having often obſer- ed as perfect a ſtate of viſion after this peration where all the vitreous humour ad been loſt, as where none of it was eva- uated. A remarkable inſtance occurred f this in a woman who had the operation erformed upon both eyes. The eyes ere both apparently ſound in other re- pects: In one, the whole of the vitreous umour was forced out along with the

cataract, and the eye ſunk entirely to the bottom of the orbit; in the other, the operation was performed with much accuracy; the cataract was extracted, and none of the vitreous humour eſcaped. In the courſe of three or four weeks, however, from the operation, both eyes were of the ſame bulk; their appearance was perfectly ſimilar, and the patient diſcovered objects equally well with each of them. This does not indeed determine the point with certainty, as it may be alleged, that the figure of the eye being preſerved by the aqueous humour, the effect produced upon viſion by the loſs of the vitreous humour cannot probably be great; but we can ſcarcely ſuppoſe that any part of ſuch an important organ has been formed in vain.

I ſhall now offer a few obſervations upon the inſtruments employed in this operation. Knives of various forms have been propoſed for it; but thoſe delineated in Plate XVI. have been moſt generally uſed; and of theſe fig. 1. and 3. are

the

the beſt: The firſt I have uſed ſucceſsfully in various inſtances; and the latter, which I now believe to be the beſt that has yet been propoſed, is the knife of the ingenious Dr Richter of Gottingen. The ſhape of the firſt is nearly that of a ſpear-pointed lancet; only the back of it is blunt, excepting a fourth part of an inch or thereby near the point, which ſhould be ſharp on both edges; and that ſide of the knife which paſſes next the iris ſhould be ſomewhat round, while the other is nearly or altogether flat. By this we prevent, as much as poſſible, any riſk of hurting the iris, which is apt to happen with a knife that is flat on both ſides and with both edges ſharp through its whole length. The operation has frequently indeed been performed with this kind of knife, but it is done with more ſafety with the one I have mentioned. It muſt be remembered, however, that although a knife for this purpoſe ſhould be extremely ſharp and finely poliſhed, it ought likewiſe to be

firm; for the cornea being of a conſiderable thickneſs, it is more difficult to pierce than thoſe not accuſtomed to this operation are apt to imagine, and who are therefore diſappointed at finding the inſtrument in ordinary uſe too fine. It ought to be at leaſt as firm as a common lancet.

For the purpoſe of opening the capſule of the lens, nothing anſwers better than the flat curved probe delineated in Plate XVIII. fig. 5. The inſtrument commonly uſed for this is repreſented in Plate XXIV. fig. 2. but we incur with it a greater hazard of hurting the iris. But whatever inſtrument is employed, it ſhould be paſſed through the pupil with much ſteadineſs, otherwiſe the iris may be readily injured, of whatever form it may be.

I have thus deſcribed all the ſteps of the operation as it is now practiſed, with ſuch improvements as it appears to admit of: But as it is an operation of much importance, and liable to different objections, even in its preſent improved ſtate, I have been

en led to conſider it with more than or-
nary attention, and to make experiments
on different animals with a view to ob-
ate theſe; the reſult of which I ſhall
ow ſhortly relate, although I did not
link it proper either to place any weight
pon them, or even to mention them in
e deſcription of the operation; for, till
onfirmed by experience upon the human
ody, no conjecture, however well found-
l it may appear to be from experiments
pon other animals, ſhould be allowed to
ave much influence on our opinion.

The moſt material objections that oc-
ur to this operation are theſe:—The vi-
reous humour is apt to paſs ſuddenly off
long with the cataract; by which the
ye is in ſome inſtances ſunk ſo much as
ever to recover its form again:—The
ncision being made in the tranſparent
art of the eye, the cicatrix which enſues
s frequently ſo extenſive as to obſtruct
he rays of light in their paſſage to the
etina; by which viſion is often as effec-
ually obſcured, as if the cataract had not
been

been extracted:—And laſtly, the lens being often too large for paſſing through the pupil, the iris is frequently much injured by this part of the operation, when in every other reſpect it is perhaps very properly performed.

In regard to the firſt of theſe, it may be alleged, that it does not occur when the operation is properly done; and that it cannot with propriety be ſtated as an objection, merely becauſe it frequently happens from awkwardneſs or inattention in the operator. It is, however, ſo frequent, that whatever can tend to prevent it, muſt be conſidered as a very material improvement.

This, I think, may be in ſome meaſure effected, by the inciſion being made in a different part of the cornea. When the opening in the cornea is made, as in the uſual way of performing this operation, in the moſt depending part of it, all the aqueous humour is inſtantly diſcharged, and the vitreous humour by this means is deprived of ſupport at its anterior ſurface;

any

any preſſure made upon the ball of the eye by the ſpeculum, or even by the natural action of the muſcles of the eye, is therefore very apt to force it out. Inſtead of this, when the inciſion is made in the upper part of the cornea, the lens may be extracted with equal eaſe; while a conſiderable part of the aqueous humour being ſtill retained by the inferior half of the cornea remaining entire, the vitreous humour is neither ſo ſuddenly nor ſo entirely deprived of the ſupport which it affords, and does not eſcape ſo readily as in the ordinary method of performing the operation. At leaſt, this I have found to happen in other animals; and there is reaſon to imagine that it will likewiſe take place when the operation is done on the human eye.

It is probable, too, that another advantage may be derived from the inciſion being made in the upper part of the cornea. One material objection to this operation, when done in the uſual way, ariſes, as I have already obſerved, from the cicatrix induced by the inciſion on the cornea.

The

The ſame extent of the cornea will no doubt be cut, when the operation is performed in the manner I have mentioned; but the cicatrix being in the upper part of the eye, it will not probably prove ſo hurtful, as it is of moſt importance for objects to be ſeen diſtinctly that lie beneath the eye. We frequently find that patients who have undergone this operation, ſee every object much more diſtinctly, when placed above the eye, than when viewed beneath it; a circumſtance that cannot in any other manner be ſo well explained.

The upper part of the cornea is cut with the ſame eaſe as the under part of it; the ſame inſtruments being employed, and the ſurgeon, patient, and aſſiſtants, being placed in the ſame manner: Only in this caſe the knife muſt be introduced with the cutting edge of it towards the upper part of the eye, the inciſion being to be extended in this direction: And as the under half of the cornea remains undivided, the lens, on paſſing through the pupil, being

ing apt to be retained by it, it muſt be utiouſly removed, either with the ſcoop, late XVI. fig. 4.; with a ſmall ſharp ook, Plate XVIII. fig. 2. or with the nall forceps, fig. 4. which were made r this purpoſe when I was engaged in e experiments that I have mentioned.

In this manner the two firſt objections to iis operation are in ſome meaſure remoed; and from all the obſervation that I as able to make of it in the courſe of e experiments to which I allude, I think probable that it will anſwer in every reect better than any other that has yet en propoſed; but as I have never put in practice in the human eye, I cannot eak deciſively about it. It is therefore ly propoſed as a hint for future obſeration.

But although we may by this means event the vitreous humour from eſcaing, and may in ſome meaſure avoid the d effects that uſually reſult from the citrix after this operation, yet the third jection remains in equal force againſt it;

it; the cataract muſt neceſſarily paſs through the pupil, and in doing ſo the iris is often irreparably injured.

As this renders the operation much more hazardous than it otherwiſe would be, it has always appeared to me that it would be an object of much importance to extract the cataract in any other manner that would not expoſe the iris to this hazard. It may be done by opening the eye behind this membrane, inſtead of making the inciſion in the uſual place in the lucid cornea; and it would be attended with this advantage, that no inconvenience would enſue from the cicatrix. I have performed the operation in this way on other animals; but it has never, ſo far as I know, been put in practice on the human eye. The objections which occur to it are, that the opening being made in the ſclerotica, the inflammation induced by it muſt probably be great; and this coat of the eye being thicker than the tranſparent cornea, wounds made in it are commonly ſuppoſed to be more diffi-

lt to heal. In ſome experiments, how-
er, which I made upon rabbits with a
ew to determine this point, no reaſon
ppeared for this concluſion. The inflam-
ation induced by an opening made in
e ſclerotica was not more conſiderable;
or was the cure in any reſpect more dif-
cult than when the operation was done
the uſual manner.

If the operation is ever performed in
his manner, the opening ſhould be made
n the upper part of the eye, by entering
he point of the knife about the tenth
art of an inch or thereby behind the
ranſparent cornea; and the inciſion be-
ig made of a ſufficient ſize for allowing
he cataract to paſs, the ſharp curved
robe, fig. 2. Plate XVIII. ſhould be
ntroduced, with a view to extract it. As
he point of the inſtrument is extremely
harp and fine, it penetrates the lens with
aſe, and in this manner it may be re-
noved without any preſſure being made
pon the eye.

Having

Having thus finiſhed the conſideration of the two operations of couching and extracting the cataract, before concluding the ſubject, I ſhall offer a few obſervations upon the comparative advantages attending them; and ſhall at the ſame time mention thoſe reaſons by which I have been induced to prefer the one to the other.

§ 4. *Comparative View of the reſpective Advantages and Diſadvantages of the Operations of Couching, and extracting the Cataract.*

The operation of couching, or depreſſing the lens, was the firſt that was practiſed for the cure of the cataract. The extraction of the lens was afterwards propoſed, as a more certain means of removing the diſeaſe. Both methods have had their abettors, and much has been ſaid in favour of each. To appreciate, therefore, the merits of theſe operations, and

to

aſcertain that by which our intention ay be accompliſhed in the ſafeſt and eaſt manner, are objects meriting particular attention.

It has been objected to the operation of uching, 1. That it frequently fails, from e cataract riſing again into its uſual ſituation. 2. That it muſt always fail when e lens is in a ſoft or liquid ſtate, by the id contained in the capſule diſperſing rough the eye when the capſule is opened by the couching needle. And, laſtly, hen the opacity lies in the capſule, and t in the lens, that it cannot be cured by uching.

With regard to the firſt of theſe, it muſt acknowledged, that the cataract frently riſes again after having been deeſſed to the bottom of the eye: But nen the lens, inſtead of being puſhed wn immediately behind the pupil, is rried, as I have directed, by the point the needle towards one angle of the e, and lodged partly beneath the viious humour, it will ſeldom riſe again.

And even where the operation fails through the fault of the ſurgeon, or from any other cauſe, the pain attending it is ſo inconſiderable, that few patients will refuſe to have it repeated once or oftener; and I have ſeldom known it fail, where this has been done.

The ſecond objection may appear of more importance to thoſe who are not accuſtomed to operate on the eye, but it is not ſo in reality. A cataract in a fluid ſtate, and ſpreading over the eye immediately on the capſule being pierced with the needle, is not a common occurrence; from my own obſervation I would ſay, that it does not happen more than once in twenty times: But were we even to meet with it more frequently, ſo far from ſtating it as an objection to the operation, we ſhould rather conſider it as an advantage. In this caſe the violence done to the eye is not ſo great as when the operation of couching becomes neceſſary in all its parts from the cataract being of a firm conſiſtence; a repetition of the ope-

tion can never be requiſite; and the
ilky whiteneſs communicated to the a-
eous humour by the diſperſion of the
quid cryſtalline through it, commonly
ſappears in a ſhort time after the ope-
tion. At leaſt that it commonly does
., is conſiſtent with my own experience;
id the obſervation is confirmed by the
ſtimony of others, particularly by Mr
ott, on whoſe authority we may rely with
onfidence.

Nay farther, even when the cataract
firm and entire, if completely ſepara-
d from its capſule by the couching-
edle, it almoſt always diſſolves in the
queous humour, without leaving any ve-
iige of opacity; an obſervation much in
avour of the operation of couching, as
: obviates the objection founded on the
iſing of the cataract after it has been
epreſſed: It ſhows, at the ſame time, that
here is little or perhaps no reaſon for ever
utting in practice the propoſal of Mr Pe-
it for removing a cataract which in couch-
ng may have been accidentally puſhed

into the anterior chamber of the eye, as time will, in moſt inſtances, accompliſh without pain or hazard what cannot be done by Mr Petit's method but at the expence of both.

The lens will diſſolve in the aqueous humour ſooner or later, according, as it is more or leſs firm when ſeparated from its capſule. The opacity produced by the diſperſion of a fluid lens in the aqueous humour, commonly diſappears in a few days after the operation: Cataracts of a firmer conſiſtence are ſeldom altogether diſſolved in leſs than ſeveral weeks; in many a ſmall portion of a depreſſed cataract is obſerved in an undiſſolved ſtate a good many months after the operation, and in a few after ſeveral years have elapſed; but this is a rare occurrence.

The third objection, of which I took notice, the alleged impoſſibility of removing the diſeaſe by couching when the cauſe of the opacity lies in the capſule and not in the lens, ſeems à priori to be the moſt concluſive againſt this operation; but it will not on examination be found

found to be ſo. In the firſt place, this variety of cataract is rarely met with: it occurs occaſionally, but by no means ſo frequently as to lead us to prefer one mode of operating to another for this reaſon alone.

Secondly, I have already obſerved that this variety of cataract cannot be cured even by extraction. The opake capſule may indeed be forcibly torn away with inſtruments paſſed through the pupil, but not without doing ſuch violence to the eye as muſt in a great proportion of caſes be productive of certain blindneſs. I may therefore, without heſitation, predict, that although this operation may be performed from time to time by thoſe who are fond of innovation, and who wiſh to ſhow their dexterity at the expence of thoſe intruſted to their care, that it will never be generally practiſed.

Farther, although I will not ſay that this variety of cataract can in every inſtance be removed by couching, yet an attempt towards it may be made with

perfect ſafety, by endeavouring to ſeparate and depreſs the capſule with the point of the needle. If this can be done, the operation will prove as ſucceſsful as if no ſuch cauſe of diſeaſe had ſubſiſted: And when it happens to fail, provided the trial is made with caution, no detriment will enſue.

Beſides theſe objections, it has been ſaid, in oppoſition to the operation of couching, that the pain and inflammation that attend it, are frequently greater than what ariſe from extraction; and that the vitreous humour is more apt to be deranged by the needle in couching, than by the other method of operating.

But neither of theſe aſſertions will be admitted by thoſe who have had ſufficient opportunities of putting both operations in practice. They know, that in general the ſymptoms of pain and inflammation ariſing from the extraction of the cataract are more conſiderable than thoſe that proceed from couching: And it will be acknowledged by all who ſpeak impartially upon

pon this ſubject, that the operation of extraction is more frequently attended with the loſs of ſome part, or perhaps of the whole of the vitreous humour, than that of couching with any material derangement of it.

We have thus ſeen that the ſeveral objections ſtated to the operation of couching, are not well founded:—That the cataract can be removed by it as effectually as by the operation of extraction:—That it is attended with leſs pain, and leſs ſubſequent inflammation; while at the ſame time it never can occaſion thoſe deformities that ariſe from a large cicatrix on the cornea, or from the ſinking of the eye-ball, which ſometimes occurs from the loſs of the vitreous humour.

But theſe circumſtances alone ſhould not be allowed to decide a queſtion of ſuch importance: The ultimate and permanent effects of the two operations ought to have much weight on our opinion. Now, from much obſervation, it appears clearly to me, that the operation

of couching proves upon the whole more ſucceſsful than the other; that is, viſion is as perfectly reſtored by couching, and, cæteris paribus, a greater proportion of thoſe who ſubmit to it receive benefit from it, than of thoſe who undergo the operation of extraction.

With thoſe who have not had frequent opportunities of obſerving the conſequences of extraction it proves always a very deceiving operation. The removal of the cataract is in moſt inſtances attended with an immediate return of viſion, much to the ſatisfaction both of the patient and operator: But in a great proportion of caſes, even of thoſe which at firſt have every appearance of proving ſucceſsful, although viſion may be tolerably perfect for ſome time, perhaps for ſeveral weeks, or even for months; yet it generally grows more indiſtinct, till at laſt the patients become altogether blind. This is the reſult of my obſervation; and it correſponds with the event of the operation

when

ien performed by various good opera-
r's.

The late Dr Young of this place, who
actiſed ſurgery for a conſiderable time
th much reputation, had at one period
very high opinion of this operation.
the ſecond volume of the Edinburgh
yſical Eſſays, he gave an account of
s ſucceſs in ſix caſes in which he had
erated a few months before, and which
the time of writing the paper appeared
be remarkably great: But in a conver-
tion with the Doctor on this ſubject a
od many years afterwards, I found his
inion much changed. The Doctor's
ſervations on the conſequences of ex-
action were exactly ſimilar to thoſe
at I had made upon it. In the great-
number of patients upon whom he had
erated, viſion was reſtored immediate-
on the removal of the cataract; but in
early the whole of them the ſight began
be impaired in a few months from the
peration, and became gradually worſe,
il total blindneſs at laſt was produced.

The

The progreſs of the loſs of that degree of viſion which is reſtored by the extraction of the cataract, is marked by the following appearances. Some degree of immobility is at firſt obſerved in the pupil —It remains inactive when the eye is expoſed to light:—It gradually becomes ſmaller; and at laſt it is found to be ſo much contracted, as ſcarcely to appear capable of admitting a crow's quill:—It now remains immoveable to whatever light it may be expoſed, and the patient is often reduced to a worſe ſtate than he was in before the operation, being even incapable of diſtinguiſhing light from darkneſs.

This unfavourable event appears to proceed from the violence, which, in the courſe of the operation, is done to the iris. This, it is well known, is a membrane of the moſt delicate texture; and as the pupil through which the cataract is forced is not ſufficiently large for admitting the lens to paſs with eaſe, this can ſeldom be extracted but with much hazard

zard of injuring this very nice and uſe-
ll part of the eye.

It may be ſaid, that the violence thus
one to the iris ſhould produce an imme-
iate effect; and that viſion, if not hurt
y it at firſt, ſhould not afterwards be
ffected. In various caſes, the iris is
orn in different places, and appears to
e irregular in its contraction and dilata-
on from the time of the operation being
erformed: But although in theſe, as well
s in other inſtances where the pupil is
nly overſtretched, blindneſs does not
ake place immediately; yet it is almoſt
s certainly to follow as if it had been
nſtantly produced. The reaſon of this
t is perhaps impoſſible to explain: But
he fact is exactly what I have mention-
d; and by impartial obſervers it will be
cknowledged to be ſo.

Proceeding upon the idea of the failure
of this operation depending in a great
meaſure upon the injury done to the iris
by the paſſage of the cataract, and being
anxious to improve an operation for which

at

at one time I had a great partiality, I have offered a propoſal for this purpoſe.——By making the opening in the eye behind the iris, in the manner I have propoſed, this inconvenience may be avoided; but whether this mode of operating will be found to ſucceed or not, future experience alone muſt determine.

In the mean time, till the operation of extraction is ſo far improved as to obviate the bad effects that I have pointed out, the method of cure by depreſſion ſhould certainly be preferred, as being more eaſily performed; leſs apt to injure the other parts of the eye; and in moſt inſtances productive of more real advantage.

SECTION XVIII.

Of the FISTULA LACHRYMALIS.

A SINUOUS ulcer, with hard or callous edges, is in general termed a Fiſtula; but authors, in treating of diſeaſes of the lachrymal paſſages, have affixed a different meaning to this term: Every obſtruction to the paſſage of the tears from the eye to the noſe, is commonly, though improperly, denominated a Fiſtula Lachrymalis. A ſinus in theſe parts, attended with calloſity, ought alone to receive this appellation; but as ſome confuſion might ariſe from any innovation that could be propoſed, I ſhall avoid, as I have hitherto done, any attempt towards it; and ſhall endeavour to deſcribe, as clearly as poſſible, the various appearances which the diſeaſe in its different ſtages is known to aſſume, under the general denomination of Fiſtula Lachrymalis.

An anatomical deſcription of the eye having already been given in the ſecond ſection of this chapter, I ſhall now refer to what was then ſaid of the parts concerned in the diſeaſe that we are now to conſider. An accurate delineation is likewiſe given of theſe parts in Plate XII. fig. 1. *b* repreſents the puncta of the two lachrymal ducts, by which the tears are carried from the eye to the ſac *e*; from whence they are tranſmitted by a canal which paſſes in an oblique direction through the os unguis into the noſe, where it terminates below the os ſpongioſum inferius. I formerly remarked, that the os unguis is divided longitudinally by a kind of ridge, which at this part forms the boundary of the orbit; and it is neceſſary to obſerve, that the groove in this bone, through which the naſal duct of the lachrymal ſac runs, lies altogether exterior to the orbit, being ſeparated from it by the ridge that has juſt been mentioned.

This

This ſhort recapitulation of the anatomy of the lachrymal paſſages, will render the deſcription now to be given of the diſeaſes to which they are liable more intelligible.

The fiſtula lachrymalis ariſes, as I have already obſerved, from obſtruction to the paſſage of the tears into the noſe; but the diſeaſe aſſumes a variety of appearances, according to the ſeat of the obſtruction, and to the effects produced by it upon the neighbouring parts. Thus we may readily ſuppoſe, that the ſymptoms produced by obſtruction in the puncta lachrymalia, or in the ducts leading from theſe to the ſac, will be widely different from thoſe which ariſe from obſtruction in the lachrymal ſac itſelf, or in the duct leading from this ſac to the noſe. And again, we might, à priori, conclude, that the appearances induced by a recent obſtruction of any of theſe parts, muſt probably be very different from thoſe ariſing from a long continuation of the diſeaſe.

The

The lachrymal puncta, and ducts connected with them, are apt to be obſtructed by burns, wounds, or whatever excites inflammation in any part of them, and when the tears are thus prevented from paſſing into the noſe, they neceſſarily fall over the cheek, and where they do not become acrid, ſo as to excoriate or fret the neighbouring parts, this diſcharge of tears is almoſt the only ſymptom which this variety of the diſeaſe ever excites: A dryneſs indeed takes place in the correſponding noſtril, by the want of a ſecretion which uſed to be poured into it; but this inconvenience is never of much importance.

It is this variety of the diſeaſe only which ought to be termed Epiphora, or a watery or weeping eye; for when the obſtruction is ſeated in any other part of the lachrymal paſſages, the diſeaſe that enſues is attended with ſymptoms of a more painful and more important nature.

When

When the lachrymal puncta and ducts remain open, if obſtruction takes place either in the under part of the lachrymal ſac, or in the duct leading from it to the noſe, the firſt warning that the patient receives of it is a ſmall tumefaction that forms in the internal canthus of the eye, that diſappears upon preſſure being applied to it, by a plentiful flow of tears paſſing into the eye, and from thence over the cheek. In this incipient ſtate of the diſeaſe, ſome portion of the tears frequently paſſes into the noſe on the ſac being compreſſed; a circumſtance always to be conſidered as favourable, as it ſhows that the obſtruction is not altogether complete.

If the tears are regularly preſſed out before the tumor becomes large, and before they have remained collected in the ſac ſo long as to become acrid, they are in general found to be clear, and of a natural appearance when forced out from the puncta. From the reſem-

blance of this fluid to the contents of hydropic collections in other parts of the body, this ſtage of the diſeaſe has been termed a Dropſy of the Lachrymal Sac a diſtinction, however, of no real importance.

When in this ſtate of the obſtruction the patient is attentive to a proper and frequent application of preſſure, and does not allow the lachrymal ſac to be over-diſtended, a complete cure may either be obtained, or the diſeaſe prevented from giving much uneaſineſs; at leaſt this is always the caſe ſo long as the tears retain their natural appearance, and while a conſiderable proportion of the contents of the tumor can be preſſed into the noſe.

It moſt frequently happens, however, from the patient being inattentive to the ſtate of the ſac, and allowing it to be over-diſtended, that this moſt ſimple ſtate of the diſeaſe proceeds in a gradual manner to turn worſe:—The paſſage into the noſe becomes completely obſtructed:—The ſwelling in the corner of the eye acquires

ires a greater bulk, but ſtill retains the tural appearance of the ſkin:—T e ars are now with difficulty preſſed ut, d they are obſerved not to be tranſ a- nt, but mixed with a proportion of a ick, opake, whey-coloured mucus, ſome- nat ſimilar to, but when minutely ex- mined found to differ conſiderably from urulent matter.

Even in this ſtage of the diſeaſe t e tient ſeldom ſuffers much pain, or any rther inconvenience than what pro- eeds from the flowing of the tears and ucus over the cheek: at laſt, however, e tumor begins to inflame, to become nſe, red, and painful to the touch; and e matter preſſed out from it has now a ore purulent appearance.

At this period the tumor has exactly e appearance of a common boil or ab- ceſs; and by thoſe not verſant in this ranch of practice, it is frequently con- dered as ſuch. It becomes gradually ore inflamed and more tenſe, till the eguments at laſt burſt, and form an o-

pening in the moſt prominent part of it at which the tears and matter contained in it are now altogether diſcharged.

When the opening thus formed is ſmall it commonly heals in the courſe of a few days; but it burſts as ſoon as any conſiderable quantity of tears and mucus is collected; and continues thus to collect and burſt alternately, till the opening becomes ſufficiently large to prevent any farther collection.

This ſtate of the diſeaſe exhibits exactly the appearances of a ſinuous ulcer with callous, and ſometimes with retorted, edges, conſtituting what is properly termed the Fiſtula Lachrymalis. Tears mucus, and purulent matter, are now abundantly diſcharged from the ſore When the bone beneath is ſound, this diſcharge is ſeldom either acrid or offenſive to the ſmell; for the opening being in general in the under part of the tumor the matter is diſcharged almoſt as ſpeedily as it is formed; but when any of the contiguous bones are carious, they are not

not only found to be ſo by the the introduction of a probe, but by the appearance, ſmell, and effects of the matter upon the neighbouring parts. In this caſe, it is thin, fetid, and commonly ſo acrid as to fret and corrode the teguments moſt contiguous to the ulcer: And when the diſeaſe is connected either with ſcrophula or lues venerea, an occurrence by no means unfrequent, the diſcharge and appearances of the ſore are different according as it happens to be combined with one or other of theſe diſeaſes.

I have thus deſcribed the different ſymptoms of this affection, and the progreſs which it uſually makes from the firſt formation of obſtruction in the lachrymal paſſages, to the more advanced ſtages of the diſeaſe; and it is highly neceſſary that practitioners ſhould be acquainted with the different appearances which the various ſtates of it afford; for the method of cure beſt ſuited to one period of the diſeaſe, is frequently unfit for, and indeed altogether inadmiſſible in others.

From the hiſtory given above of th riſe and progreſs of this diſeaſe it is evi dent, that in every inſtance it originate from obſtruction in ſome part of the la chrymal paſſages: The cure muſt there fore depend upon the removal of this ob ſtruction; but the means of effecting thi will vary according to the nature of th cauſe by which it is produced, and to th particular age of the affection, as wel as of the part in which it is ſeated: Ou prognoſis muſt likewiſe be directed by at tention to theſe points; for we may rea dily conceive, that a cure will be more eaſily and more certainly obtained in the caſe of a recent obſtruction, where the bones are yet perfectly ſound, and where there is no ſuſpicion either of ſcrophula or lues venerea, than in oppoſite circum ſtances. When the obſtruction is induced by the venereal diſeaſe or by ſcrophula, and eſpecially when the os unguis and other contiguous bones have become cari ous, nothing will prove effectual till the general taint of the conſtitution is remo-

ed; and even then a weeping eye or a requent flow of tears over the cheek ve-y commonly enſues: But when the fiſtula achrymalis ariſes, as it moſt frequent-y does, from inflammation of the la-hrymal paſſages, induced either by cold, y the meaſles, or any inflammatory af-ection to which the eyes are liable, if it as not continued ſo long as to hurt the ones beneath, we may in general give a avourable prognoſis: For in ſuch circum-tances, a due perſeverance in the means o be now pointed out, though not always, s yet very commonly attended with an ntire removal of the diſeaſe.

Again, when obſtructions are induced n the lachrymal canals by tumors in the ontiguous parts, which they ſometimes re, particularly in caſes of polypi in the noſe, where the tumour by preſſing upon the inferior extremity of the naſal duct is apt to produce a ſtoppage to the flow of tears, the prognoſis muſt in a great mea-ſure depend on the practicability of re-moving the excreſcence; for till this is

accompliſhed, nothing effectual can b done in the treatment of the fiſtula la chrymalis.

The lachrymal ſac and ducts are line with a mucous membrane, ſimilar to th membrane that lines the noſe; wit which it is connected, and of which in deed it appears to be a continuation. I a healthy ſtate of theſe parts, the naſa duct of the lachrymal ſac will eaſily ad mit a crow's quill; a ſize perfectly ſuffi cient for allowing a free paſſage of the tears into the noſe: But when this mem brane that lines the duct becomes infla med, as the fulneſs or ſwelling thus pro duced muſt diminiſh the diameter of the canal, obſtruction proportioned to the vio lence of the inflammation muſt neceſſarily form in it.

I particularly mention the naſal duct, as it is in this duct that the obſtruction producing the moſt frequent variety of the diſeaſe is ſeated, owing to its near contiguity to the noſe; by which, in caſes of violent catarrh, inflammation is apt to

be communicated to it from the membrane of the noſe: But obſtruction to the flow of tears into the noſe will juſt as certainly take place from inflammation ſeated in the ducts leading from the eye to the lachrymal ſac; and the principles upon which the method of cure proceeds muſt be nearly the ſame in both.

When the diſeaſe proceeds from inflammation, we ſhould depend chiefly on ſuch remedies as prove moſt effectual in inflammatory affections of other parts of the body. General and local blood-letting ſhould be preſcribed in quantities proportioned to the ſtrength of the patient, together with laxatives and a low diet; and a ſaturnine ſolution ſhould be applied to the part affected, either in the form of a poultice, or upon compreſſes of ſoft linen. In this manner, when the means are timeouſly employed and duly perſiſted in, obſtructions ariſing from this cauſe are frequently removed; but when the parts have been long in an inflamed ſtate before any remedies were uſed, it often happens

that

that a cure cannot afterwards be accomplished even by the moſt complete removal of the inflammation: For, as inflamed parts, when kept long in contact, are everywhere apt to adhere, ſo the ſides of the lachrymal paſſages, when much inflamed, very readily unite together; by which a very obſtinate variety of the diſeaſe is produced; and which ſhows, in a ſtrong point of view the propriety of treating all ſuch affections with the utmoſt attention from the beginning: By doing ſo, we frequently have it in our power to prevent the formation of this obſtruction, and which nothing but a very painful operation can afterwards remove.

When the obſtruction is ſeated in the puncta lachrymalia, or in the ducts leading from theſe to the ſac, and when it is found to continue after the inflammation which gave riſe to it is removed, we are to endeavour to remove it by inſerting a ſmall probe into each punctum, ſo as to paſs it along the courſe of the ducts into the lachrymal ſac. In this manner the opening

pening may be rendered pervious, and may be afterwards preſerved by injecting, wice or thrice daily with a ſmall ſyringe, weak ſolution of alum, ſaccharum ſaturni, or white vitriol; and by keeping t other times ſmall ſilver or leaden probes conſtantly inſerted, till the ſides of the ducts become callous, the tears will thus find a free paſſage to the ſac, by which a cure will be obtained.

This is no doubt a very nice operation; but whoever is verſant in the anatomy of theſe parts, and accurately acquainted with the courſe of the lachrymal ducts, will ſeldom find much difficulty in effecting it. The probes repreſented in Plate XXI. figs. 5. and 6. and the ſyringe and ſmall tubes in Plate XX. figs. 1. 5. and 7. are the inſtruments to be employed for it.

In obſtructions of theſe ducts, it has been likewiſe propoſed to paſs a ſmall cord or ſeton from the puncta through the lachrymal ſac into the noſe, and to allow it to remain till the paſſage becomes callous.

But,

But, beſides the difficulty of effecting this there is much reaſon to think that it would do more harm than good, as the ſmalleſt cord that could be introduced would create much inflammation and pain.

The obſtruction, however, is moſt frequently ſeated in the duct leading from the ſac to the noſe, forming a variety of the diſeaſe that requires a more complex method of treatment. When induced by inflammation, a ſtrict antiphlogiſtic courſe, ſuch as I have pointed out, will frequently remove it; but when this happens to fail, either from the diſeaſe having been improperly treated from the firſt, or from any other cauſe, other means ſhould be employed. I ſhall therefore ſuppoſe, that all ſymptoms of inflammation are removed; but that the naſal duct ſtill remains obſtructed; that it is attended with a ſlight tumefaction in the internal canthus of the eye, along with a frequent flow or diſcharge of tears over the cheek; and that the ſkin covering the ſwelling ſtill retains its natural appearance.

This

This is the moſt ſimple ſtage of the diſeaſe. It is neither attended with pain nor with any material deformity or inconvenience; and with no great attention patients frequently prevent it from ever requiring the aſſiſtance of ſurgery. By the lachrymal ſac being preſſed from time to time with the finger, the contents of it are diſcharged before they become acrid; and although this will not accomplish a cure, it will in general render the diſeaſe very ſupportable; and in this ſtage of it, ſo far as I can determine from my own experience, nothing farther ſhould be attempted. Various means have indeed been recommended for effecting a complete cure of this ſtage of the diſeaſe, but as they are all tedious and painful, and eſpecially as they are by no means certain, as long as a watery or weeping eye is the only inconvenience that occurs from it, a prudent practitioner will rather adviſe a patient to ſubmit to this, than undergo the pain, confinement, and uncertainty, of an operation. As a freſh

attack

attack of inflammation would be apt to render the diſeaſe worſe, he will adviſe him to avoid expoſure to cold, and whatever might tend to induce an inflamed ſtate of the eye and neighbouring parts; and in the mean time he will deſire him to truſt to gentle preſſure alone for obviating any effects that might enſue from the obſtruction.

For the purpoſe of applying preſſure to the lachrymal ſac, various machines have been invented; the moſt convenient form of which is repreſented in Plate XIX. fig. 1. by which any neceſſary degree of compreſſion may be continued with eaſe and without interruption. But, as we are now ſuppoſing that the naſal duct of the lachrymal ſac is completely obſtructed, and that no part of the tears can be forced into the noſe, no benefit can be derived from a continued courſe of preſſure; and as any advantage to be obtained from the practice is found to acrue with equal certainty from the finger being applied from time to time on the courſe

ourſe of the ſac, I have always, in this age of the diſeaſe, been accuſtomed to depend upon this alone.

The other means that have been recommended for the cure of this ſtage of the fiſtula lachrymalis, are, the introduction of a probe into the naſal duct of the lachrymal ſac, with a view to force open the obſtruction:—The injecting of water or any other mild liquid, for the ſame purpoſe:—And, laſtly, it has been propoſed to introduce a quantity of quick-ſilver into the ſac, through the lachrymal puncta, the weight and fluidity of which being ſuppoſed well fitted for making it paſs through any ordinary degree of obſtruction.

Mr Anel, a French practitioner, was the firſt who brought to any perfection the method of introducing a probe, or the point of a ſyringe, into the lachrymal ſac: but although any one acquainted with the anatomy of theſe parts, may accompliſh this in a ſound or pervious ſtate of the lachrymal paſſages, yet in an obſtruct-

ed

ed ſtate of the naſal duct it can ſcarcely be done; and, even when effected, it is not found that ſo much advantage is derived from it as was at firſt expected.

Two modes are propoſed for effecting this operation: In the one, a ſmall probe, or tube of a ſyringe, is inſerted at one of the lachrymal puncta; and being inſinuated along the courſe of the correſponding duct, it is in this manner paſſed into the ſac, and from thence we are directed to carry it through the naſal duct into the noſe: Or, when this cannot be fully accompliſhed, we are deſired to force an opening through this duct by an injection thrown in with a ſyringe inſerted at one of the puncta. The ſyringe above mentioned, with the ſmall correſponding tubes, as delineated in Plate XX. is the inſtrument recommended for this purpoſe. By the other mode of doing the operation, a curved probe, or tube, of a larger ſize, ſuch as is delineated in fig. 4. of the ſame Plate, is to be inſinuated into the noſtril of the diſeaſed ſide; and the

oint of the inſtrument being paſſed in eneath the edge of the os ſpongioſum in- erius, it is there to be eaſily moved about ll it meets with the termination of the aſal duct of the lachrymal ſac, from hence it is cautiouſly carried forward till paſſes into the ſac itſelf.

Different objections, however, occur to neſe operations. The puncta lachryma- ia are ſo very ſmall, that no probe or ſy- inge can be paſſed through them of a ufficient ſize for removing any obſtruc- ion in the naſal duct. And although a yringe of a larger ſize may in a ſtate of ealth be introduced through the noſtril irectly into the naſal duct itſelf, in a diſ- aſed ſtate of theſe parts, it can ſeldom be lone but with much pain and difficulty. n obſtructions of this duct, as they very commonly ariſe from inflammation com- nunicated from the membrane of the no- trils, the diſeaſe often commences in the extremity or termination of the canal; ſo hat it is always difficult and often im- poſſible to introduce a probe or ſyringe

into it; and if the operator is even ſo fortunate as to accompliſh this, it always requires ſome violence to force it into the lachrymal ſac. Hence a good deal of pain is excited, by which the duct and ſac are both apt to become inflamed: ſo that, inſtead of any advantage being derived from the practice, much miſchief is apt to enſue from it.

The propoſal of curing this diſeaſe by injections, is very ingenious; but, for the reaſons I have mentioned, it will ſeldom I imagine be of much real utility. We are indeed told, that it will often prove effectual in caſes of ſlight obſtruction; and that all the pain and uncertainty of the ordinary means of cure may thus be prevented. But when an obſtruction is completely formed, it is altogether inadmiſſible, from the impoſſibility of introducing a probe; and whenever the ſtoppage of the tears is only partial, there will be much riſk of doing more harm than good, by the irritation, pain, and conſequent inflammation induced by the operation.

n ſuch circumſtances, the patient ſhould ather ſubmit to any inconvenience attend- ng the diſeaſe than to uncertain trials of his kind.

For the ſame reaſons that the paſſing of probe, and of injections, into the la- rymal paſſages, can ſeldom if ever prove ſeful, the introduction of quickſilver in- o the lachrymal ſac will likewiſe proba- ly fail: Where obſtruction is already ormed, it will not be able to remove it; nd unleſs obſtruction takes place, no at- empt of this kind is indicated. The ractice, however, is ingenious; and as may be done with more eaſe, ſo it is leſs xceptionable than the uſe of probes or njections.

In the early ſtages of the obſtruction, have frequently paſſed injections from he puncta lachrymalia into the noſe; ut although this proved always ſatisfac- ory at the time, I have not found that ny real or permanent advantage has en- ued from it; for although I have now done it in upwards of fifty inſtances,

and in many of theſe liquids were daily paſſed along the lachrymal paſſages for ſeveral weeks together, yet in none has the diſeaſe been removed by it.—The liquids that I employ, are warm-water, roſe-water, and weak ſolutions of ſaccharum ſaturni.

I have thus deſcribed the modes of treatment to be adviſed in this the moſt ſimple ſtage of the diſeaſe; but I muſt again obſerve, that as long as a watery or weeping eye, with perhaps a ſlight occaſional tumefaction in the internal canthus, is the only inconvenience that it excites, nothing ſhould be adviſed but the application of moderate preſſure from time to time with the finger.

But whenever the diſeaſe arrives at ſuch a height as to produce either much pain or deformity, a different treatment is required. When the tumor in the angle of the eye becomes large, inflamed, and painful, as the collected matter ſoon becomes ſharp and acrid, the contiguous bones are apt

st to be injured, if the matter is not uickly diſcharged.

In ſuch circumſtances, a perſon not acuainted with the anatomy of the diſeaad parts, and with the cauſe of the tuor, would be induced to truſt entirely o an opening being made in it ſufficient or diſcharging the matter: For in this ate of the diſeaſe, it aſſumes exactly the ppearance of a common boil or abſceſs; nd therefore this method of treatment night be conſidered as proper and applicable. But although ſome temporary adantage might thus be derived from the liſcharge of the matter, as the cauſe of he tumor would not be removed, a permanent cure it is evident would not take place. We are here ſuppoſing that the diſeaſe originates from obſtruction in the naſal duct leading from the lachrymal ſac. It is clear, therefore, that the ſac only being laid open, will be attended with no farther benefit than that of producing an immediate diſcharge of its contents; for while the tears are conveyed into it by

the puncta and lachrymal ducts, if they do not find a free paſſage into the noſe, they muſt neceſſarily be either diſcharged by the opening newly formed, or, if this is allowed to heal, they will again collect and produce a tumor ſimilar to the firſt.

In this ſituation, therefore, our views muſt be—To diſcharge the contents of the ſwelling—To procure a free diſcharge in future for the tears from the lachrymal ſac into the noſe—And to prevent the duct from being again obliterated. And this being accompliſhed, the external opening muſt be healed up.

While the tumor continues firm and hard, it ought not to be opened, as this would not only excite more pain, but the parts beneath could not be ſo freely examined as they otherwiſe might be. As long, therefore, as much hardneſs continues, a warm emollient poultice ſhould be kept conſtantly applied to it; and as ſoon as it becomes ſoft and compreſſible, it may be opened with freedom.

On

n account of the contiguity of the eye, nd of the inſertion of the orbicularis uſcle, to make an inciſion into the lachmal ſac, has in general been conſidered as a nice and hazardous operation, and articular directions have been given, not nly for the figure and ſize of the inciion, but for diſcovering the exact ſite of ne ſac.

There is no cauſe, however, for aniiety upon this point; for the ſituation of he ſac is always aſcertained with preciion by the tumor itſelf, which is formed, s I have already obſerved, by tears, and mucus collected in the ſac; ſo that any ncision that diſcharges this collection muſt for certain reach the ſac. Neither does the form of the opening make much difference in the hazard attending the operation. A ſemilunar cut has commonly been recommended; not only with a view to render the opening larger, but in order, as it is ſaid, to avoid with certainty the tendon of the orbicularis muſcle. There is no riſk, however, of this ten-

don being injured if the inciſion is made where it ought to be, viz. in the moſt prominent and moſt depending part of the tumor; and it is eaſier done with a common lancet than with any other inſtrument. The point of the lancet ſhould be puſhed into the upper part of the tumor, freely into the ſac, and carried downwards in a ſtraight direction to the moſt depending part of it. A few fibres of the orbicularis muſcle which are inſerted into and ſpread over the lachrymal ſac, will indeed be divided by the inciſion; but no inconvenience is found to enſue from this. And a ſtraight cut, ſuch as I have directed, admits of a very free examination of the parts beneath, at the ſame time that it ſerves to evacuate more effectually than any other the tears and mucus collected in the tumor.

An opening being thus formed, the contents of the ſwelling are to be forced out by moderate preſſure; a ſmall doſſil of ſoft lint ſpread with emollient ointment ſhould be inſerted between the lips of the ſore,

ore, and a ſlip of moderately adheſive laſter may be employed to retain it. As plentiful diſcharge commonly takes place, it is neceſſary to renew the dreſſings daily; and with a view to preſerve the opening of a ſize ſufficient for admitting of a free examination of the parts beneath, inſtead of a doſſil of lint, a ſmall piece of prepared ſponge may be inſerted into the ſore every ſecond or third day: but as the ſwelling of the ſponge, by the moiſture applied to it, tends to irritate and inflame the contiguous parts, it ſhould previouſly be covered with a ſingle ply of oiled ſoft linen, which does not hinder it to ſwell, at the ſame time that it allows it to be more eaſily withdrawn; for the purpoſe, however, of removing it more readily, a piece of ſtrong waxed thread ſhould be attached to it.

In former times it was the common practice, after opening the tumor, to endeavour to deſtroy the hard edges of the ſore, either with the actual or potential cautery, or with ointments impregnated with

with red precipitate, and other eſcharotics. By this the patient was made to ſuffer much unneceſſary pain; more deformity was produced; while the chance of a cure was much leſs than when milder dreſſings are employed. Indeed the only way in which a cure can be effected with ſuch treatment, is the total obliteration of the lachrymal ſac and ducts connected with it. Theſe being either deſtroyed, or a conſiderable degree of inflammation induced upon them, their internal ſurfaces were ſometimes made to adhere together on preſſure being applied to them. This, however, could not frequently happen; for while the puncta lachrymalia and ducts connected with them remained open, the tears ſtill finding acceſs to the parts beneath, would neceſſarily produce frequent returns of the diſeaſe; and when by the violence of the inflammation theſe ducts happened to be obliterated, ſtill the patient would be liable to a conſtant trickling of the tears over the cheek. This idea, therefore, ought never to be kept in view.

ew. Inſtead of eſcharotic applications, e mildeſt dreſſings only ſhould be em-oyed; nor ſhould the doſſils of lint or onge that I have adviſed, be of ſuch agnitude as to produce much pain; ll that is expected from them being e dilatation of the lachrymal ſac, by hich we are enabled to ſearch with eedom for the commencement of the uct leading from the ſac to the noſe.

In this manner any hardneſs remaining n the edges of the cut will ſoon be re-noved; and the ſore being ſufficiently leared of a tough viſcid kind of mucus, omewhat reſembling ſloughs, with which, or a few days after the operation, it is lways covered, we are now to proceed o the moſt important part of the cure, the earching for and forming a free paſſage or the tears from the lachrymal ſac to he noſe.

This part of the operation is effect-ed in different ways: By clearing the natural duct leading from the lachrymal ac through the groove in the os unguis into

into the noſe: Or, when this proves to be impracticable, by forming an artificial opening into the noſe directly through the ſubſtance of this bone from the under and back part of the lachrymal ſac.

As unneceſſary violence ſhould always be avoided, we ſhould firſt endeavour, by every probable method, to diſcover the natural conduit of the tears, and to remove the obſtruction formed in it. For this purpoſe, a firm round-pointed probe, or the curved inſtrument, Plate XXV. fig. 2. ſhould be inſerted into the bottom of the lachrymal ſac; and if the point of it can be inſerted into the commencement of the naſal duct, ſome hope may be entertained of the paſſage being made pervious: Some degree of force will be neceſſary indeed for effecting this; but whenever it can be done, which often happens, by the probe being puſhed forward in a proper direction with moderate preſſure, it ought always to be preferred to every other method of treatment.

The paſſing of the probe into the noſe the moſt difficult as well as the moſt uncertain part of this operation; for when this is accompliſhed, we are in general able to preſerve the opening, by keeping a piece of bougie, catgut, or lead-wire conſtantly inſerted into it, till the paſſage of the duct is rendered ſufficiently clear. But it ſometimes happens, that all our trials for the diſcovery of the naſal duct prove ineffectual. Much force, however, ſhould never be employed; for, as the point of the inſtrument will more readily be puſhed againſt the bone than into the duct, it would be more apt to do harm than good. When it enters the ſuperior part of the canal with eaſe, it may with ſafety, and with ſome probability of ſucceſs, be puſhed forward in the manner I have mentioned; but when the duct is obliterated through its whole courſe by the ſides of it adhering together, an occurrence, however, which I now believe to be leſs frequent than I once ſuppoſed it to be, it would be highly improper, for the reaſon

reaſon I have given, to uſe any violence in endeavouring to detect it.

When, therefore, all our trials for diſcovering the natural paſſage between the lachrymal ſac and the noſe prove unſucceſsful, as we know that a cure will not be obtained if the tears be not conveyed into the noſe, our views muſt now be ſolely directed to the formation of an eaſy and free artificial opening for this purpoſe.

In the anatomical deſcription that I premiſed of theſe parts, we have ſeen that the poſterior part of the lachrymal ſac is lodged in and attached to a groove in the os unguis; and as the ſac is ſeparated from the cavity of the correſponding noſtril by this bone only, it is evident that an opening made from the back part of the ſac muſt ſerve to convey the contents of it into the noſe. It is this part of the operation that we are now to conſider.

I have already obſerved that the actual cautery was formerly employed for deſtroying the hard edges of the ſore, and

as

; it was a prevailing opinion with almoſt
ll the practitioners of the laſt and pre-
eding centuries, that the fiſtula lachry-
alis was almoſt always connected with
carious ſtate of the correſponding bones,
ne cautery was likewiſe uſed for aſſiſting
n the exfoliation of the diſeaſed parts. In
onſequence of this, a cure was ſometimes
ccompliſhed by a remedy that was em-
loyed only for the removal of what they
onſidered as an accidental occurrence,
nd not as a cauſe of the diſeaſe: For the
s unguis being extremely thin, a hot iron
an ſcarcely be applied to it without de-
troying the ſubſtance of it entirely; and
s this happened in ſome inſtances, a cure
vas obtained even where the practitioners
vho employed the remedy were totally
gnorant of the manner in which it acted;
or as they were unacquainted with the
eal cauſe of the diſeaſe, from their igno-
ance of the anatomy of the parts con-
cerned in it, any cures that they perform-
ed muſt have been more the effect of acci-
dent than of deſign on their part.

It

It is ſurpriſing, however, to find even in later times, when the cauſe of the diſeaſe is well known, and when the principles of the operation are founded on an exact knowledge of the parts affected, that the ſame method of treatment has been continued. Till of late, the actual cautery was very commonly employed by the beſt ſurgeons of this country, for perforating the os unguis. Even the celebrated Cheſelden patroniſed this method; and it is ſtill practiſed in ſeveral parts of the Continent.

With all the caution, however, that can be employed, of covering the hot iron with a canula, or wet clothes, it is an uncertain and dangerous practice; for parts muſt be deſtroyed by it, or at leaſt much injured, which ought not to be hurt, as it is impoſſible to convey a red-hot iron to the os unguis, and to deſtroy part of this bone, which alone ought to be perforated, without doing miſchief to the contiguous parts.

The

The cautery ought therefore to be laid
de; and this the more readily, as the
ne intention can be accompliſhed with
ual certainty, and with more eaſe and
fety, in a different manner, merely by
rcing a firm ſharp inſtrument, of the
rm and ſize of the common trocar, from
e back part of the ſac through the os
guis. A curved inſtrument of this kind
is commonly been employed, ſuch as is
preſented in Plate XIX. fig. 5. but the
raight trocar, delineated in the ſame
late, fig. 2. anſwers better. With this
ſtrument, the opening through the bone
ay be made, either by twirling it round
etween the fingers; by moving it for-
ard and backwards with the fingers or
alm of the hand; or by puſhing it ſtraight
orward; and the ſurrounding parts may
e protected, at the ſame time that the
ſtrument is more ſteadily fixed than it
therwiſe can be, by paſſing it through a
anula, ſuch as is delineated in the ſame
late, fig. 4.

In proceeding to this part of the opera
tion, the patient's head ſhould be ſup
ported by an aſſiſtant; and the ſurgeon
ſitting or ſtanding between him and th
window, ſhould introduce the canula o
the trocar into the opening made in th
tumor; and the end of it being carrie
to the under and back part of the ſac, i
ſhould be kept firm in this ſituation wit
one hand, while the ſtilette is inſerted in
to it with the other: The point of th
ſtilette muſt now be puſhed firmly bu
ſlowly forward in a proper direction int
the noſtril, and we know that it has en
tered that cavity as ſoon as a diſcharg
of blood is perceived to take place from it

In making the perforation, a prope
direction to the courſe of the ſtilette is
point of the firſt importance, and there
fore merits the greateſt attention. I
turned in any degree outward, or in
clining towards the eye, it would pe
penetrate the orbit;—poſteriorly, it would
paſs into the ethmoid bone;—and if puſh
ed in a horizontal direction towards the
noſe

ſe, the os ſpongioſum ſuperius would injured, while the intention of the operation, that of affording a free paſſage r the tears into the noſe, would be entirely fruſtrated. In order to avoid theſe conveniencies, the inſtrument ſhould be ſhed on towards the noſe in an oblique rection downwards from the inferior rt of the lachrymal ſac. Care ſhould taken, however, not to endeavour to llow the courſe of the natural paſſage the tears, as by ſome we are directed do; for in this manner we would not ly injure the maxillary bone, but the ening here could not be made ſo free d large as in that part of the os unguis here the lachrymal ſac terminates, and here the commencement of the naſal ct takes place.

On the inſtrument having got into e noſtril, it ſhould be moved with ſome eedom; not by carrying it farther in, this might injure the parts within the oſe; but by giving it a free rotatory moon, ſo as to render the opening made

with it ſufficiently pervious: This being done, the ſtilette ſhould be withdrawn, when a lead probe, fully equal to the ſize of the canula, ſhould be introduced, and then the canula ſhould be taken out. One end of the lead ſhould paſs freely through the opening in the os unguis, and the other muſt project about the eighth part of an inch or thereby paſt the level of the external ſore. With a view to prevent it from ſlipping altogether into the noſe, this projecting part of it ſhould be ſomewhat curved after the canula is withdrawn. The ſore ſhould now be covered with a ſmall pledgit of lint ſpread with emollient ointment, and the whole may be retained with a ſlip of adheſive plaſter; for no bandage can be adapted to theſe parts but with much inconvenience and diſtreſs.

In this manner the operation is completed; but much attention is neceſſary on the part of the ſurgeon to preſerve the opening, and to prevent it from filling up in future. With this view, the lead-

d-probe muſt be continued for a conſi-
rable time, in order to render the paſ-
e as callous as poſſible, care being ta-
n to withdraw it every day or two for
e purpoſe of clearing it and the ſore
m any impurities; and at each dreſ-
g a quantity of infuſion of oak-bark, a
ution of alum, or any other aſtringent,
ould be injected with a ſmall ſyringe
m the external opening into the noſe.
ne ſyringe, fig. 1. Plate XX. anſwers
is purpoſe properly.

No certain period can be fixed, at which
e can ſay the paſſage will be ſufficiently
llous, and at which the lead-probe may
withdrawn; for this will in ſome mea-
re depend upon the conſtitution of the
tient, as well as on the particular ſtate
the parts themſelves. In ſome in-
ances, it may poſſibly be done with
fety in a ſhorter period; but I have ne-
er ventured on taking it away till the
ghth or ninth week has elapſed, com-
only not ſo ſoon. The inconvenience
tending it is inconſiderable; and we are

to remember, that the ſucceſsful iſſue of the operation is to depend greatly on due attention to this part of it; for if obſtruction ſhould afterwards occur, either from the opening in the bone filling up with callus, or from the ſofter parts adhering together, the patient will ſoon be in the ſame diſeaſed ſtate as before any attempt was made towards a cure.

On withdrawing the lead, the external opening ſhould be cleared from any mucus with which it may be ſtuffed; and as by this time it will be reduced to a very ſmall ſize, it will ſoon heal merely by laying the ſides of it together, and covering it with a piece of adheſive plaſter: Or, when this does not prove effectual in a few days, touching the edges of the ſore with cauſtic will in general complete the cure quickly. In the mean time, moderate preſſure ſhould be applied upon the courſe of the lachrymal ſac, either with the finger of the patient frequently placed upon it, or by means of the machine, Plate XIX. fig. 1. And this ſhould be continued, till there is reaſon to ſuppoſe

ſe that the ſac and contiguous parts ve again recovered the tone of which ey were deprived by the long conti-ance of the diſeaſe, as well as by the peration.

What I have ſaid with reſpect to the opriety of continuing the lead-probe r a conſiderable time, and of apply-reſſure afterwards on the courſe of the c, is equally applicable when the natu-l paſſage of the tears has been diſcover-l as when an artificial opening is formed the manner I have adviſed. Indeed ore attention is neceſſary to this point the one caſe than in the other; for we nd by experience, that the diſeaſe is ore apt to return when the operation is niſhed by the tears being carried through ne naſal duct, than when an artificial pening is made for them; owing, as I magine, to a wider and more free paſſage eing commonly formed by this laſt me-hod of conducting the operation.

Inſtead of a probe of lead, ſome practi-ioners employ a piece of catgut or com-non bougie; but neither of theſe anſwers

the purpoſe ſo well. They are more difficult to introduce;—they retain the mucus of the part, and therefore are not ſo cleanly;—they are apt to be entangled by the newly divided bone; and they do not prove ſo effectual in rendering the paſſage callous as the other.

I have thus deſcribed the different ſteps of the operation; and the practice I have adviſed is ſuch as experience has proved to be the moſt ſucceſsful. It muſt indeed be acknowledged, that it does not in every inſtance ſucceed; for caſes frequently occur which render fruitleſs every attempt that can be made for curing them. After performing the operation in the moſt ſatisfactory manner; when the paſſage for the tears has been rendered completely pervious; and even where external preſſure has afterwards been continued in the moſt attentive manner; the diſeaſe is ſometimes found to recur. In ſuch inſtances, however, we conclude, that ſcrophula, or ſome other diſeaſe of the conſtitution, takes place; by which alone, or by the contiguous bones being

rarious, this operation, when properly performed, can be rendered abortive. It may ſometimes indeed fail by too ſmall an opening being formed in the os unguis; but this is the fault of the operator, and not of the operation. There is no cauſe for timidity on this point: For although it has been alleged that miſchief may enſue from breaking this bone with the trocar, yet daily experience tends to prove the contrary; for even where it has been broken with much freedom, I never knew any inconvenience ariſe from it.

In order to prevent the bad conſequences which thoſe not accuſtomed to this operation have ſuppoſed would occur from the ſplintering of this bone with a trocar, it has been propoſed to take out a piece of it entirely with a ſharp cutting inſtrument, ſuch as is delineated in Plate XVIII. fig. 3.

By applying this inſtrument to the os unguis, in the manner that I have directed for the uſe of the trocar, a portion of the bone may be eaſily cut out; but there is

no

no neceſſity for this precaution. The operation is more effectually done with the trocar; and as no danger is found to enſue from it, it ought to be preferred.

In the treatment of this diſeaſe, when it is unfortunately found to return even after the operation has been properly performed, if it appears to ariſe from a carious ſtate of any part of the contiguous bones, a cure may yet be accompliſhed by laying the tumor again open; by endeavouring to accompliſh an exfoliation of the diſeaſed bone; and by afterwards forming another opening in the os unguis in the manner I have directed, if the opening made by the ſeparation of the exfoliated pieces of bone ſhall not be ſufficient. But when a relapſe takes place, without ſome obvious cauſe of this kind, as any opening we might form in the bone would probably be obliterated by a continuance of the ſame diſeaſe of the ſyſtem by which the firſt attempt was rendered fruitleſs, it could anſwer no purpoſe to repeat it, were it not with a view to make trial of a different mode of operating.

It was propoſed a conſiderable time ago by different practitioners, to obviate the uncertainty attending this operation, by introducing a ſmall canula of gold or ſilver, either through the natural paſſage of the os unguis, or through an opening made with a trocar; and by leaving the canula, and healing the ſkin over it, thus to form a paſſage which no diſeaſe of the conſtitution could act upon. By thoſe who conſider the uſual operation for the fiſtula lachrymalis as very uncertain, it has been propoſed to employ a canula of this kind in every caſe; but as this operation, when properly performed, proves for the moſt part completely ſucceſsful, and as patients in general conſider it as a ſevere meaſure to have any extraneous body left in a wound with a view to remain, I would not adviſe it in any caſe till we have found by experience that the other will not ſucceed. In every caſe, however, where the uſual operation has failed, the method of cure by a canula ought to be tried; and when properly performed, it will often ſucceed.

Tubes

Tubes for this purpoſe ſhould all be of gold, as being leſs apt to be injured by the fluids of the part affected than any other metal; and much care ſhould be taken to have the canula well poliſhed, and as exactly fitted as poſſible to the parts in which it is to be placed. When properly fitted, it gives little pain, even from the time of being introduced, and at laſt it frequently ſits with perfect eaſe. In Plates XX. XXV. and XXVI. different forms are delineated of theſe tubes, but of theſe fig. 5. and 6. Plate XXV. as recommended by Mr Pellier, are the beſt. They are of a length that experience has ſhewn to anſwer in the moſt part of adults; and their diameter ſhould be as large as the opening in the bone can admit, with a view to prevent, with as much certainty as poſſible, the tears and mucus that may paſs into them from ſtopping them up.

The proper length of the tube is obviouſly a point of the firſt importance in this operation. For, if too ſhort, it will fail by the under part of it being apt to be

be plugged up with the lining membrane of the noſe, and if too long, by the end of the tube being preſſed againſt the ſeptum naſi on the oppoſite ſide of the noſtril. This laſt objection appears to apply to the tubes of Mr Wathen, which, in one caſe in which they were tried here by my friend Dr Wardrop and me, proved unſucceſsful, chiefly from this cauſe; and as Mr Pellier's tubes, which are conſiderably ſhorter than Mr Wathen's, have anſwered in every caſe in which I have known them uſed, I conclude that in this reſpect, as I believe they are in every other, preferable to thoſe of Mr Wathen. As the directions given for the uſe of Mr Pellier's tubes in the enſuing ſection, are ſufficiently full, I ſhall now refer to them; and directions for thoſe of Mr Wathen will be ſeen in the explanation of Plate XXVI. in which the tubes that he recommends are delineated.

In deſcribing the progreſs of the diſeaſe, I had occaſion to obſerve that the tumor in the corner of the eye, when it inflames and ſuppurates, proceeds at laſt to a ſtate of

of ulceration. This circumſtance, however, does not point out any difference in the method of treatment; only in this caſe, inſtead of uſing a lancet for laying the ſac more freely open, an inciſion ſhould be made with a ſcalpel upon a director introduced at the ulcer. In every other point the cure is to be conducted as I have already adviſed, by rendering the natural paſſage of the tears pervious when this is found to be practicable; and, when this cannot be accompliſhed, by making an artificial opening through the os unguis.

When, again, the os unguis and other contiguous bones are found to be carious, the ſores ſhould be preſerved open till the diſeaſed parts are all removed; when, if a large enough opening is not formed for the paſſage of the tears, by the pieces of bone which have been taken away, it may now be made, and all the other ſteps of the operation completed in the manner I have already pointed out. In local affections of theſe bones, a cure may thus be in ſome inſtances accompliſhed; but where

where the caries depends upon a venereal aint, as is not unfrequently the caſe, although a well conducted courſe of mercury may cure the general diſeaſe of the onſtitution, it is ſeldom able to prevent very extenſive exfoliations of the diſeaſed ones; by which, the natural paſſage of the tears being deſtroyed, and the bones through which they ſhould be conveyed, being either altogether removed, or perhaps rendered perfectly flat, they muſt in future paſs entirely over the cheek; for in ſuch circumſtances art can afford no relief.

SEC-

SECTION XIX.

Additional Remarks on Diſeaſes of the EYES.

IN the preceding ſections of this chapter, the diſeaſes of the eyes were ſo fully treated of, that it was not my intention to ſay any thing farther upon them: But a foreign oculiſt, Mr Jean François Pellier, having appeared in this country, where he deſervedly acquired much reputation, I judged it proper in the former editions of this work, to communicate ſuch parts of Mr Pellier's practice as appeared to be of importance. Poſſeſſing the advantages of a liberal education, a ſound judgment, and much experience, Mr Pellier has been enabled to ſuggeſt improvements in the treatment of almoſt every diſeaſe to which the eyes are liable; and an uncommon degree of ſteadineſs, conjoined to a quick eye-ſight, give him a command

mmand of himſelf and a facility of o-
rating not often attained. I think it
oper likewiſe to remark, that Mr Pel-
r communicated his knowledge of the
ſeaſes of the eyes in the moſt candid
anner; which puts it in my power to
y his obſervations before the Public,
having given me permiſſion to do ſo.

While, by giving an early account of
aterial improvements, I thus acquit my-
lf of an obligation to the Public, I at
e ſame time embrace, with much ſatiſ-
ction, the opportunity which it affords
announcing the merit of an operator,
ho, although a ſtranger, and at yet not
uch known in this country, is perhaps
ne of the beſt oculiſts now in Europe.

In the firſt place, I ſhall mention what
have learned of Mr Pellier's practice;
nd ſhall then offer ſuch remarks as occur
o me upon it.

On the ſubject of the cataract his ob-
ervations are particularly valuable. By
ttentive examination, he can almoſt in
very inſtance ſay whether a cataract is

hard, ſomewhat ſoft, or altogether fluid and as his method of operating varies ac cording to theſe circumſtances, it is o importance to be able to determine à pri ori with regard to them. He can alſo a certain whether a cataract is of a larg or ſmall ſize; by which he is often di rected in the different ſteps of the ope ration.

I know that theſe are circumſtance which practitioners in general conſider as impoſſible to judge of with preciſion particularly with reſpect to the conſiſt ence of cataracts; and I muſt acknow ledge, that I was clearly of this opinion till of late that I was convinced of th contrary, not by Mr Pellier's aſſertion alone, but by different proofs of the fac I aſſiſted Mr Pellier in different caſe where the cataract was extracted: In al of them he previouſly foretold the con ſiſtence and ſize of the cataract with per fect confidence; and in every inſtanc his prognoſis was preciſe and accurate I am credibly informed, too, that this hap pene

ined with other practitioners in whoſe reſence he operated in different parts this country.

He diſtinguiſhes ſeveral varieties of ca-ract, which in practice ought to be kept view.

The three principal varieties that he entions are, the true or curable cataract; e mixed or doubtful kind; and the falſe incurable.

1. What he terms the curable or true taract, is known by the pupil retaining s natural power of contracting and dila-ng in full perfection, while the patient at the ſame time able to diſtinguiſh the ght of a candle, or of any other luminous dy, and even certain bright colours, ch as red, green, &c.

2. The mixed or doubtful cataract, is at-nded with a weak feeble contraction and latation of the pupil, and the patient can arcely diſtinguiſh light from darkneſs. long with an opake ſtate of the lens, is is ſuppoſed to be attended with an af-

fection of the retina, or of ſome other part of the eye.

3. In what he terms the falſe or incurable cataract, along with an opake ſtate of the lens, there is evidently a diſeaſed ſtate of the pupil, which remains immoveable to whatever degree of light it may be expoſed, at the ſame time that the patient does not diſtinguiſh between the moſt brilliant light and perfect darkneſs.

Cataracts may be either ſimple or compound, or they may be complicated with other affections.

1. A ſimple cataract is a mere opacity of the cryſtalline lens, all the other parts of the eye remaining perfectly ſound.

2. A cataract is ſaid to be of a compound nature, when blindneſs is produced by an opake ſtate of the body of the lens, of the liquor which ſurrounds it, and of the capſule.

3. The diſeaſe is conſidered as complex, when it is conjoined with other affections of the internal parts of the eye, the moſt frequent of which is amauroſis.

It is not unfrequently, too, attended with a diſſolution of the vitreous humour, and ſometimes with an opake ſtate of it. This variety of the diſeaſe is for the moſt part produced by violent inflammation. It is eaſily diſtinguiſhed by thoſe accuſtomed to an attentive examination of the eye; and it is particularly neceſſary for operators to be well acquainted with it; for no operation, neither extraction nor depreſſion, ſhould be ever adviſed for it. The operation has never in any inſtance of this kind of cataract been known to ſucceed; and for the moſt part, Mr Pellier obſerves, it is productive of very dreadful pain, and the moſt violent degree of inflammation that he ever met with. In general, too, the pain and inflammation thus induced remain fixed and permanent, without yielding in any degree to the remedies employed for it.

Cataracts are ſometimes too attended with an imperforated iris; in which caſe, as no light can paſs to the bottom of the eye, no degree of viſion takes place; and

at other times they are complicated with adheſions, either to the iris, or to the capſule of the vitreous humour. Preternatural adheſions of the lens to the capſule of the vitreous humour can ſcarcely be diſtinguiſhed by the eye; but they are very commonly met with where the diſeaſe has been originally produced by, or attended with, much inflammation; and they always render the operations of extraction and couching difficult. It is this kind of adheſion, Mr Pellier imagines, which prevents the operation of couching from ſucceeding ſo frequently as it otherwiſe might do; for when it takes place in any degree, the cataract, he ſuppoſes, will always riſe again on the needle being removed from it.

In forming an opinion of cataracts from the real ſeat of the diſeaſe, different circumſtances require attention.

1. It often happens, as I have already remarked, that the lens only is affected.—This variety of the diſeaſe is moſt frequent,

Mr

Pellier obſerves, in adults, and eſpe-
lly in old age.

2. When the opacity is ſeated in the
ſule of the lens, if the anterior part
it only is diſeaſed, it appears to be re-
rkably white, and to be placed very
ntiguous to the iris; while, on the con-
ry, if the poſterior part of it only is
ected, it is commonly of a grey co-
ur, and the opacity appears to be deep-
ſeated.

It ſometimes happens, both after the
eration of extraction and couching, that
the courſe of ten or twelve days, the
ſule of the lens, which at firſt was
rfectly ſound, becomes quite opake.—
his variety of the diſeaſe Mr Pellier
rms the Cataracte Secondaire.

3. When the body of the lens and its
ſule are both opake, the cataract is
mmonly ſoft or even altogether fluid.
this caſe, much care is required in the
peration to prevent the capſule from
urſting: A degree of nicety, Mr Pellier
bſerves, which thoſe not much accuſtom-
ed

ed to this branch of practice can ſeldom arrive at, but which is very practicable with operators of experience.

4. In ſome inſtances, cataracts appear to proceed from a partial affection of the lens, ſmall opake ſpots being obſerved in it, while the reſt of it remains ſound. In this caſe, viſion is always moſt perfect in an obſcure light when the pupil is moſt dilated.

In forming an opinion of the conſiſtence of cataracts, three circumſtances particularly require attention.

1. When a cataract is of a firm conſiſtence, it is in almoſt every inſtance of a brown colour; it appears in general directly behind the iris; not ſo deep as the lens is uſually placed; and the pupil dilates and contracts very ſlowly.

2. A fluid or ſoft cataract is not commonly white, but rather of a cream colour, ſomewhat reſembling purulent matter; and for the moſt part in this variety of the diſeaſe, the globe of the eye appears

ars full, and ſomewhat more prominent an uſual.

3 It ſometimes happens, Mr Pellier ſerves, that along with this fluid ſtate a cataract, the capſule is much thickned. To this he gives the appellation of e Cyſtic Cataract.

The colour of a cataract is another point importance.

1. I have juſt obſerved, that a ſoft or uid cataract is for the moſt part of a ream colour; but in that variety of the iſeaſe ſometimes met with in children birth, although it is always fluid, the olour is almoſt always a milk white. In eneral, however, at other periods of fe, a white cataract is of a firm, cheeſy conſiſtence.

2. When a cataract is yellow, a ſmall ortion of the lens often remains hard, ne reſt of it being diſſolved into a thin ranſparent fluid, forming that variety of he diſeaſe uſually termed the Hydatid Caaract.

3. Although

3. Although a black cataract is not a frequent occurrence, Mr Pellier ſays he has met with it in different inſtances. The only diſeaſe for which it may be miſtaken is the gutta ſerena; but with due attention, the one may be diſtinguiſhed from the other. In the gutta ſerena the diſeaſe for the moſt part comes on ſuddenly, the pupil is of a deep black, it remains immoveable in every degree of light, and the patient cannot diſtinguiſh colours, or the cleareſt light from perfect darkneſs; whereas, in the black cataract, the acceſſion of blindneſs is commonly ſlow and gradual; the pupil, to a certain degree, contracts and dilates on being expoſed to light. The bottom of the eye is of a dark colour, but not of ſuch a deep black as in the gutta ſerena; and the patient can diſtinguiſh light and vivid colours. In ſhort, the ſymptoms of this variety of the diſeaſe are exactly the ſame with thoſe of the common cataract; only, inſtead of being white, the opacity is black.

Mr

Ir Pellier prefers the method of cure extraction, excepting in a few caſes re the pupil is uncommonly ſmall, n he operates by depreſſion. He al- s prepares his patients for the opera- , by confining them to a low diet for or ſix days; by giving two or three s of ſalts and ſenna; and when ple- ra prevails, he takes away ten or twelve ces of blood.

n extracting the cataract, he makes the iſion of the cornea in the ordinary ce and of the uſual ſize; but he has e peculiarities in his method of doing

nſtead of placing his patient with his e oppoſite to a clear light, he ſeats n with his ſide towards it. If he is to rate upon the left eye, he uſes his right d, and the right ſide of the patient is ced towards the window. He always s his left hand in operating upon the ht eye; and in this caſe the patient is de to ſit with his left ſide towards the ht.

The

The patient being ſeated with the ey that is not to be operated upon tie down with a bandage, an aſſiſtant ſup ports his head behind, while at the ſam time he fixes the eye with the ſpeculum fig. 5. Plate XXII. The figure repre ſents the inſtrument of the full ſize. I is made of wire; and it may either be o gold, ſilver, or any other metal. Th head being fixed by preſſing it againſt th breaſt with one hand under the chin, th aſſiſtant takes this inſtrument in the other and placing the round curvature of on of the ends upon the upper eye-lid imme diately behind the cartilaginous border o the eye-lid, he muſt by gentle gradual preſſure upon the eye-ball, fix it above while the operator with the fore and mid dle fingers of his left hand, when the ope ration is to be done upon the left eye, muſt fix it below, at the ſame time that he draws down the under eye-lid. In uſing this ſpeculum the upper eye-lid is forced almoſt entirely into the orbit, but it im-

mediately

mediately returns to its natural ſituation on the inſtrument being withdrawn.

The eye being thus fixed, the knife, fig. 1. Plate XXII. fixed in its handle, muſt be put into the operator's right hand, who now divides the cornea in the uſual manner: But when the point of it comes oppoſite to the pupil, if the capſule of the lens is to be divided, Mr Pellier has arrived at ſuch dexterity in this operation, that he plunges the point of the knife through the pupil into the lens; and withdrawing it gently, he carries the point of it forward to the oppoſite ſide of the eye, and finiſhes the operation in the uſual way. But in making the latter part of the inciſion, he is very attentive to the preſſure made by the ſpeculum, which he deſires the aſſiſtant to remove entirely before the inciſion is completed, in order to prevent the vitreous humour from eſcaping.

This being done, the eye-lids are immediately ſhut; and while they are in this ſtate, a ſlow, gradual preſſure is made upon

upon the eye-ball, with the flat end of the inſtrument which he terms a Curette fig. 1. Plate XXV. which for this purpoſe is placed immediately above the tarſus of the upper eye-lid. As the acceſs of light to the eye is thus prevented, the pupil remains in a ſtate of dilatation, by which the lens is more eaſily preſſed out than it otherwiſe could be; and if the preſſure be applied in a cautious manner, no part of the vitreous humour is ever forced out.

When the cataract does not come out entire, which is ſometimes the caſe, or when it is found to adhere to the contiguous parts, the end of the curette is introduced through the pupil, and any adheſions that take place are gradually ſeparated; at the ſame time that any detached pieces of the lens are turned out through the opening in the cornea: Or, inſtead of the curette, the ciſtatome, fig. 3. Plate XXIV. is ſometimes employed for ſeparating ſuch adheſions.

In the courſe of this operation, it ſometimes happens that the iris is forced too much forward into the anterior chamber of the eye, or even altogether through the inciſion in the cornea. With a view to prevent the bad effects that might reſult from this, Mr Pellier inſinuates the flat ſide of the curette into the wound in the cornea, ſo as to preſs the iris into its natural ſituation.

This is the uſual method in which Mr Pellier performs this operation; but circumſtances ſometimes occur that require ſome peculiarity of management. The moſt material of which are theſe: When he has reaſon to conclude that the cataract is in a fluid ſtate without any opacity of the capſule, inſtead of making any opening into the cornea of the uſual ſize, he introduces a ſharp-pointed knife, ſomewhat convex on the back, into the inferior part of the tranſparent cornea at a proper diſtance from the iris; and having made an inciſion of about the tenth part of an inch in length, he puſhes the point of the inſtrument

ment upwards till it comes oppoſite to the pupil, when he carries it cautiouſly on till it reaches the lens; and having now made an opening in the capſule ſufficienly large for diſcharging the fluid contained in it he withdraws the inſtrument with the ſame caution with which it was introduced, and in this manner the operation is finiſhed: The cataract being in a ſtate of fluidity, it paſſes eaſily off without any preſſure.

When, again, along with a ſoft or fluid cataract, there is reaſon to ſuppoſe that any part of the capſule is opake, or even where the capſule alone is ſuppoſed to be diſeaſed, he carefully avoids opening it or burſting it in the courſe of the operation: In either of theſe events, he ſays it would be with difficulty extracted. He therefore by ſlow gradual preſſure with the curette, in the manner I have mentioned, forces out the lens, contained, as he imagines, in its capſule or cyſt; and he does it, he ſays, in every inſtance without forcing out any part of the vitreous humour. In ſome

aſes, however, he finds it neceſſary to ntroduce the end of the curette through he pupil, and to ſeparate the capſule of he lens from the contiguous parts; but ven this, he ſays, does no harm to any art of the eye. The importance of our eing able to judge from the appearances f a cataract, of the real ſtate of the diſ- aſe, is therefore ſufficiently obvious, from he difference which this variety of it re- uires in the method of conducting the peration.

In extracting the cataract, it is a matter f the firſt importance to avoid the iris with the knife; but as this is extremely difficult in eyes that are not prominent, Mr Pellier often employs a knife with hat ſide of it convex which paſſes next to the iris. One of theſe inſtruments is repreſented in Plate XXII. fig. 2. In very other reſpect this knife is the ſame with that which he uſes in ordinary caſes, repreſented in fig. 1. of the ſame plate.

In the courſe of this operation, it ſome- times happens that the aqueous humour

eſcapes in too great quantity before the point of the knife is carried acroſs the eye ſo as to penetrate the oppoſite ſide of the cornea: When this takes place, which it often does when the hand of the operator is not perfectly ſteady, as the iris is apt to paſs in before the point of the inſtrument, Mr Pellier adviſes the ſharp-pointed knife to be withdrawn, and the other with the probe point, fig. 3. to be introduced at the opening in the cornea; and the point being ſlowly carried over to the oppoſite ſide of the eye, an inciſion is there to be made, either with the other ſharp-pointed knife or with a common lancet, ſufficiently large for letting out the blunt point of the other; when the operation is to be finiſhed, by puſhing it forward, and making a ſemi-circular inciſion in the uſual way in the under part of the cornea.

As ſoon as the cataract is extracted, it is the common practice to preſent a watch or ſome other object to the patient, with a view to diſcover the ſucceſs of the operation.

ation. In ſome inſtances Mr Pellier has been forced to conſent to this, but he does not approve of it. Inſtead of this, he immediately cloſes the eye-lids, and covers each eye with a ſmall bag of ſoft old linen or cotton about half filled with ſoft fine wool. Theſe bags are applied dry, and are fixed with pins to a circular bandage of old linen paſſed round the forehead, which again is kept firm in its ſituation by a ſlip of the ſame linen made to paſs beneath the chin and over the upper part of the head; care being taken to fix them both with pins to the night-cap below.

The patient is now to be undreſſed, and with as little exertion as poſſible ſhould be laid in bed, upon his back, with his head low: In this ſituation he is deſired to remain with as little variation as poſſible during the firſt ſix or eight days, as it tends more than any other he can be placed in to a ſpeedy cure of the wound in the cornea. If the patient is not low and emaciated, Mr Pellier always adviſes

eight or ten ounces of blood to be taken in the courſe of a few hours after the operation. He keeps the patient upon a low diet, and gives ſmall doſes of opiates from time to time, which anſwer better than a large doſe at once, which often excites ſickneſs and vomiting, ſymptoms that by all means ſhould be guarded againſt; for nothing ſo readily hurts the eye after this operation as the exertion of vomiting, coughing, and ſneezing. For which reaſon he does not admit of tobacco being uſed in any form, for the firſt eight or ten days.

An eaſy ſtool is procured daily, and on the fourth or fifth day the dreſſings are removed; when after clearing the eye of any mucus or matter that has formed on it, and the eye-lid being cautiouſly lifted, to examine the ſtate of the wound, the ſame kind of bandage is applied again. From this time forward the dreſſing is renewed every ſecond day, and in ten or twelve days from the operation the eye ſhould be bathed before the new bandage is

s applied, with a weak ſaturnine ſolution; but till this period warm milk and water is conſidered as preferable. About the end of the third week the bags of wool, after having been gradually leſſened, are taken away, and a piece of green ſilk put over the eyes inſtead of them. If no unuſual interruption occurs to the cure, the diet is now made gradually better; and when the operation has been performed on one eye only, Mr Pellier commonly allows the patient to go abroad at the end of the fourth week, but never ſooner; and even then the eyes are directed to be well covered: But when both eyes have been cut, he adviſes a confinement of at leaſt ſix weeks.

This is the plan of treatment which Mr Pellier purſues in ordinary caſes; and he attributes much of the ſucceſs with which his operations are attended to a rigid obſervation of theſe regulations. But where there is a particular tendency in the ſyſtem to inflammation, remedies of a different kind are required.

The eye becomes in ſome caſes ſo much inflamed even in the courſe of a few hours from the operation, that one blood-letting is not ſufficient. In this caſe he adviſes leeches to be applied to the temple and contiguous parts; and if a ſecond or third general evacuation is neceſſary, he directs the blood to be taken from the foot, as by experience he finds this to prove more ſucceſsful than taking it from the arm or neck. The patient is deſired to drink plentifully of Arabic emulſion, with a large proportion of nitre. The pediluvium frequently repeated he finds proves uſeful. And, for the removal of that violent pain which inflammation ſupervening to this operation commonly excites, nothing that has yet been tried, he thinks, anſwers ſo well as a liniment compoſed of the white of an egg and powdered alum beat for a conſiderable time together: A little of which ſhould be applied to the eye every two hours between two plies of ſoft old linen. Beſides affording relief from pain, it tends more effectually than any

ther remedy to ſtop the progreſs of inflammation; inſomuch, that Mr Pellier employs it in every caſe as ſoon as the eye begins to inflame.

Inſtead of alum, he ſometimes adds to the white of an egg three grains of white vitriol, and the ſame quantity of ſaccharum ſaturni diſſolved in a ſpoonful of roſe water; and the whole being well beat together till it puts on the appearance of white froth, a little of this is inſerted between the eye-lids with a ſmall pencil three or four times a-day, at the ſame time that the eye-lids are covered with a ſmall bag of thin linen in which ſome of it is contained. When the heat and pain attending the inflammation begin to abate, he adviſes a poultice compoſed of a ripe apple well boiled, with the water preſſed out of it, and a ſmall quantity of camphor and powdered ſaffron added to it.

By perſevering duly in theſe means the inflammation is commonly at laſt removed. In ſome inſtances, however, the

reverſe of this takes place, and notwithſtanding the utmoſt attention, all the ſymptoms become worſe; the veſſels of the tunica conjunctiva become turgid; the eye-lids ſwell to a conſiderable ſize; and the pain, which before was ſevere, is now inſupportable. In this ſituation, nothing has any effect in ſtopping the progreſs of the inflammation but local blood-letting carried to a conſiderable extent by inciſions made in the affected parts. For this purpoſe the mere diviſion of the turgid veſſels with a lancet or ſmall ſcalpel ſometimes anſwers; but in general it proves more ſucceſsful to take away ſmall portions from different parts of the internal ſurface of the eye-lids with ſmall convex ſciſſars, ſuch as is repreſented in Plate XXII. fig. 4. This, Mr Pellier obſerves, ſeldom fails of giving immediate relief: he has never found that it does harm afterwards, and the ſtate of the eye being very critical, no remedy ſhould be omitted that affords any chance of obviating the preſent danger; for if this

this is not quickly done, ſuppuration will ſoon take place either in the coats of the eye, or in one or both of the chambers, by which the power of viſion is very commonly entirely deſtroyed.

When matter is evidently formed, a frequent uſe of warm emollient fomentations, applied particularly to the eye by means of a funnel of paſteboard, or of any other ſubſtance, will ſometimes produce a ſlow diſcharge of it at the inciſion in the cornea: But when this does not ſucceed in the ſpace of a day or two, no more time ſhould be loſt; the matter ſhould be diſcharged by an inciſion, made in the moſt depending part of the abſceſs, when ſeated in the ſubſtance of the cornea; or, by opening the lips of the inciſion made for extracting the cataract, when the collection is in either of the chambers of the eye. By this means the patient will be immediately relieved from pain, while at the ſame time it will give him the only chance of preſerving the uſe of his eye.

During

During the firſt two or three weeks after this operation, a kind of herniary ſwelling is apt to form in the eye, by the iris or ſome other part being forced out at the opening in the cornea, either by violent coughing, ſneezing, or ſome other effort; and in ſome inſtances, by expoſing the eye too ſoon and too frequently before the cicatrix is ſufficiently firm for reſiſting the preſſure thus produced upon it. When the tumor is ſmall, it may commonly be removed by touching it frequently with a ſmall pencil dipped in Goulard's extract of lead, concentrated by evaporation, or in any mild antimonial eſcharotic; an attempt, Mr Pellier obſerves, that may be made with ſafety, if care be taken to prevent the cauſtic from hurting the reſt of eye, by touching the diſeaſed part only, and immerſing the whole eye immediately in warm milk, or in ſome warm emollient decoction. But when the diſeaſe is farther advanced, and the tumor firm and ſolid, it anſwers better to remove it entirely either with

ith the ſcalpel or ſciſſars; or if it ap-
ears to be any part of the aqueous hu-
nour contained in a thin membranous
roduction, as is ſometimes the caſe, all
hat is neceſſary is, to make an inciſion
nto it with a lancet of a ſize ſufficient to
iſcharge what it contains. It is ſcarcely
eceſſary to obſerve, that after either of
hoſe operations, the parts muſt be treat-
d with much attention, otherwiſe, much
harm would ariſe from it. A ſtrict anti-
phlogiſtic regimen muſt be obſerved. The
eye ſhould be lightly covered, either with
a ſmall bag, ſuch as I have mentioned a-
bove, filled with ſoft wool, or with a
compreſs of old linen ſoaked in a weak
ſolution of ſaccharum ſaturni.

Mr Pellier's method of extracting the
cataract, which I have thus endeavoured
to deſcribe, with his treatment of the
conſequences that ſometimes enſue from
it, is the reſult of much experience, and
uſually proves more effectual than any
other with which we are acquainted.
Much of Mr Pellier's ſucceſs undoubted-

ly

ly proceeds from his ſuperior dexterity in performing the operation; but much of it alſo depends upon the minute attention that he gives to every caſe for a conſiderable time after the operation. In ordinary practice, and eſpecially with the moſt part of itinerants, it is commonly ſuppoſed, if the operation is properly performed, and if the cataract comes away eaſily, that little more is required of the operator; but it is much otherwiſe with Mr Pellier, who conſiders the after treatment as ſo eſſential, that he commonly declines to operate where he cannot have the ſubſequent management of the caſe for two or three weeks: And by conſtant and aſſiduous attention, he is often able to obviate ſymptoms that would otherwiſe prove alarming; and which often might even render operations abortive, which would otherwiſe prove completely ſucceſsful. This I had various opportunities of obſerving.

In the preceding ſection, I entered into a full diſcuſſion of the reſpective merits

rits of the two operations of couching and extracting the cataract; and I then endeavoured to eſtabliſh the preference of the former: But if experience ſhall ſhow, that Mr Pellier's method of operating is attended with more permament advantages, I ſhall be very ready to retract my opinion; for which purpoſe, I ſhall carefully attend to the conſequences of thoſe operations that he has performed in this country; and as the public will probably be intereſted in them, I ſhall at ſome future period perhaps communicate the event of them.

There are two points of importance in this operation, with reſpect to which I differ in opinion from Mr Pellier. When he conſiders it as proper to divide the capſule of the lens, he frequently does it, as I have already obſerved, by inſinuating through the pupil the point of the ſame knife with which he makes the inciſion of the cornea, even before the inciſion is completed.

This

This may poſſibly be done with ſafety by ſuch a very dexterous operator as Mr Pellier: But as moſt practitioners, by imitating him, would run the riſk of hurting the iris, the practice ſhould not be encouraged; for when the capſule of the lens is to be divided, it is ſurely better to do it after the inciſion of the cornea is finiſhed, by lifting up the flap, and paſſing in the end of the blunt probe repreſented in Plate XVIII. fig. 5. or of the ciſtatome, Plate XXIV. fig. 3.

The other point to which I allude reſpects the practicability of extracting the capſule of the lens, without doing any material injury to the eye.

When the cataract appears to be of a firm conſiſtence, and when the diſeaſe is ſuppoſed to be confined entirely to the lens itſelf, Mr Pellier frequently opens the capſule in the manner I have juſt deſcribed, with a view to allow of a more eaſy extraction of the lens; and in this caſe he admits that the capſule remains in the eye: But when he finds, after an operation,

peration, that the capſule of the lens becomes opake, or if he obſerves that ny part of it has been previouſly in a tate of opacity, he adviſes it to be cauiouſly extracted with ſmall forceps: And gain, in every caſe where he ſuſpects he cataract to be fluid, forming what he alls the Cyſtic or Hydatid Cataract, he voids the diviſion of the capſule, and dviſes the lens to be taken out included n it; which he ſays may be done in the manner I have mentioned, by making an equal and gradual preſſure upon the ball of the eye immediately after the diviſion of the cornea; or by ſeparating any adheſions that take place between the capſule of the lens and the contiguous parts, with the curette, Plate XXV. fig. 1. paſſed through the pupil.

I have not indeed ſeen Mr Pellier extract the capſule of the lens, after removing the lens itſelf; for no caſes requiring it occurred during his reſidence here: I received, however, full information of his method of doing it, by introducing ſmall

forceps

forceps at the pupil. But as I cannot imagine how this can be done without injuring the eye materially, I muſt ſtill retain the opinion I advanced of it in a preceding ſection, till I have evident proofs of its being practiſed with advantage. And whenever theſe are offered, I ſhall receive them with much ſatisfaction, as it would in many inſtances be a material improvement of this operation.

We have now to conſider the poſſibility of extracting the capſule entire along with the lens: Several practitioners in this country had opportunities of ſeeing Mr Pellier extract cataracts, as they ſuppoſed, in this ſituation. I ſaw him operate in two inſtances of this kind, where he as well as ſeveral others imagined that the real capſule was taken out along with the lens; but as I entertain a different opinion on this ſubject, it is proper to ſtate the reaſons which have led me to adopt it.

1. The capſule of the vitreous humour, and that which contains the lens, are ſo intimately

ntimately connected together, that it is ifficult, or perhaps impoſſible for the beſt natomiſt to determine whether they are eparate productions or not: At leaſt they re ſo intimately connected, that they appear to be formed of the ſame ſubſtance, he cryſtalline lens being ſurrounded with coat which ſeems to be a thin lamella f that which forms the capſule of the itreous humour. The contrary, I know, as been alleged; but whoever will make he experiment, will find that the capſule f the lens has exactly the appearance hat I have mentioned. It appears to e a production of the other; and they annot be ſeparated without tearing or deroying ſome part of one or both of them: Now, if this is the caſe when the contents of the eye are all laid open, and when all the aſſiſtance can be got that nice diſſection affords, it appears to me impoſſible that they ſhould be ſeparated in the operation of extracting the cataract without injuring the reſt of the eye, and par-

ticularly the vitreous humour, very ma-
terially.

2. In performing this part of the ope-
ration, viz. in attempting to extract the
capſule of the lens entire, Mr Pellier does
it by means which do not appear ade-
quate to the intended effect. He does it
in moſt inſtances, by making a gradual
equal preſſure over the ball of the eye,
and not by the introduction of forceps.
Now, it is difficult to conceive in what
manner preſſure applied to the eye can
ſeparate that intimate connection which
certainly takes place between the capſule
of the vitreous humour and that of the
cryſtalline lens: By preſſure they are fre-
quently both forced out; but no operator
would wiſh to meet with this, and no per-
ſon guards with more anxiety againſt it
than Mr Pellier, inſomuch, that the eſcape
of the vitreous humour, or even of any
part of it, is an occurrence he rarely meets
with. In ſome caſes indeed Mr Pellier
inſinuates his curette, as I have already
remarked, through the pupil, with a view
to

) detach the capſule of the lens from the ontiguous parts: He allows, however, nat this is not always neceſſary; and be-ides, there is much cauſe to ſuſpect that ne eye would often be hurt by it.

3. When it is found, however, as I have lready obſerved, either during the ope-ation or afterwards, that the capſule of ne lens is opake, even Mr Pellier him-lf does not attempt to extract it by pref-ure. In this caſe he does it with for-eps paſſed through the pupil. Now, if reſſure anſwers in one variety of the iſeaſe, it ought probably to do ſo in o-hers, ſo that the uſe of forceps ſhould ot be neceſſary; but it is only in the hy-atid or ſoft cataract which Mr Pellier llows that this practice by preſſure ſuc-eeds.

4. But as ſeveral practitioners, both ere and elſewhere, have ſeen Mr Pellier xtract the cataract, ſurrounded, as they magined, with its proper capſule; and s he aſſerts with confidence, that it may e done merely by preſſure; it will be

aſked, In what manner is this apparent contradiction to be explained? I can account for it only on the ſuppoſition of there being in all ſuch caſes, where this practice of extracting the capſule entire is conſidered as admiſſible, a preternatural formation of a new membrane within the capſule of the lens; which being of a firmer nature than the capſule itſelf, and probably very little, if at all, attached to the contiguous parts, we can eaſily ſee how it may be forced out entire, even by moderate preſſure, and how eaſily by-ſtanders may be deceived with it. When I firſt ſaw it done by Mr Pellier, as he previouſly ſaid that he would extract the whole capſule along with the lens; as I had heard from very reſpectable authority that he had done it in different inſtances in Glaſgow; and as I certainly ſaw the cryſtalline puſhed out, ſurrounded with a membranous bag, I muſt own that I was nearly converted to Mr Pellier's opinion: But on further conſideration, the reaſons I have mentioned againſt it appeared too

concluſive.

nclufive, even for this weight of evi-
nce, to remove; and ſince that period,
circumſtance has occurred, which with
e puts the matter beyond a doubt. A
taract of a ſoft nature was extracted by
r Pellier, ſurrounded with this mem-
rane or bag quite entire. From the firſt
doubted much of its being the proper
apſule of the lens, as it was ſaid to be:
or this tunic is well known to be exceed-
ngly fine and delicate; whereas this was
membrane of a tolerable degree of firm-
eſs, which required ſome force to tear
. The patient, however, diſtinguiſhed
bjects immediately after the operation;
nd what was then advanced concerning
could not be well refuted: But by ſome
auſe or other, poſſibly from the eye be-
oming inflamed, an opacity ſoon began
o form in the old ſite of the cryſtalline,
lirectly behind the pupil, forming to all
ppearance a real cataract; and it now
ontinues even after the inflammation is
emoved. Whatever explanation may be
given of this by thoſe who are inclined to

ſupport the contrary opinion, it proves to me a convincing proof that ſome deception takes place where the capſule is ſuppoſed to be extracted entire along with the lens; for in this caſe, where the capſule was imagined to be taken entirely out, the opacity which ſucceeded, and which ſtill exiſts, appears evidently to be ſeated in the capſule, and no where elſe. I therefore conclude, where practitioners have imagined the capſule was extracted entire, that they have been deceived by the lens being enveloped with a preternatural bag or cyſt, formed perhaps by an inflammatory exſudation from the internal ſurface of the capſule: That this production however is certainly formed in this manner, I will not poſitively aſſert; but in my opinion it is the moſt probable way by which we can account for it.

It is certainly right, however, to attempt to extract this membrane, whenever it is met with, for viſion muſt be very imperfect while it remains. But if I may venture to diſſent from the opinion of

of one ſo verſant in matters of this kind as Mr Pellier is, I would obſerve, that we ſhould not, even in the moſt fluid cataract, endeavour to extract it without opening the capſule ſo as to diſcharge the contents of it: For as the cyſt, of which we have been ſpeaking, does not appear to be firmly attached to the neighbouring parts, they might probably be ſeparated with as much eaſe, when the cyſt is empty, as when perfectly full, and it would in this ſtate paſs through the pupil with leſs riſk of hurting the iris; an object that I have elſewhere endeavoured to ſhow is perhaps the moſt important of any in this operation.

Theſe are the remarks that I have to offer on Mr Pellier's theory and practice in the treatment of cataract. If farther obſervation ſhall convince me that I am wrong, I will readily acknowledge my miſtake; but in the mean time, the reaſons I have adduced appear to evince the impropriety of extracting the capſule piecemeal, by means of forceps paſſed through the pupil,

as well as the impoſſibility of making it paſs entire along with the lens.

It ſometimes happens in ſmall-pox, as well as in ſevere inflammation of the eye, from whatever cauſe it may proceed, that the centre of the cornea is left in a ſtate of opacity, by matter forming between the coats of it. When not carried off by the remedies uſually employed, if the iris, retina, and other parts of the eye appear to be ſound, Mr Pellier adviſes an operation, from which he has in different inſtances derived much advantage. The centre of the cornea being opake, the rays of light are thus prevented from paſſing to the bottom of the eye through the pupil; but when the ſides or external border of the tranſparent cornea ſtill remain clear and ſound, light may be allowed to paſs to the retina by enlarging the pupil; which, Mr Pellier ſays, may be done with ſafety by making an inciſion from one ſide of the iris to the other. And his method of doing it is this: He firſt makes an inciſion in the prominent part

part of the cornea, in the ſame manner as for extracting the cataract: He then inſerts a ſmall grooved director beneath the flap of the cornea through the pupil; and having paſſed it in a horizontal direction immediately behind the iris towards the outer angle of the eye, he now takes a pair of ſmall curved ſciſſars, and paſſing one of their blades along the groove of the director, he at once divides this part of the iris, when he withdraws the inſtruments and makes a ſimilar inciſion on the oppoſite ſide of the eye. By this means, when the opacity is confined to the centre of the cornea, which it often is, the rays of light which paſs through the ſides of it get acceſs to the bottom of the eye by the pupil being extended from one ſide of the iris to the other; and thus a degree of viſion is produced which could not otherwiſe be obtained. It will readily be imagined that perfect viſion is not to be expected in this ſtate of the eye; for a variety of reaſons concur againſt it: But it is a matter of importance for a

perſon already totally blind to be rendered capable of finding his way, and of conducting himſelf from one place to another, which, by this operation, Mr Pellier has done in different inſtances: And, ſo far as I know, the public are indebted to him alone for propoſing it.

After the operation, the eye muſt be tied up, and treated in the ſame manner and with the ſame attention as is done after extracting the cataract; for where ſo much violence is done to the eye, if inflammation be not guarded againſt, much miſchief may enſue from it.

In deſcribing the method of dividing the iris, I have ſaid that it ſhould be done with ſciſſars; for this membrane being looſe and unſupported, it would yield before the edge of the ſharpeſt knife. In the introduction of the director and ſciſſars, care ſhould be taken, in paſſing them between the iris and lens, not to injure either the lens or its capſule; that is when the diſeaſe is not complicated with

with cataract; for when the cryſtalline is opake it ſhould be extracted.

In the treatment of the fiſtula lachrymalis, Mr Pellier has much merit; for, with moſt operators, it often happens that no permanent advantage is obtained from any of the remedies that they employ, and even thoſe who prove moſt ſucceſsful very frequently fail. Mr Pellier does not ſay that he always ſucceeds; but he does ſo in moſt inſtances; and I know that his method has often proved ſucceſsful where others have failed.

In a confirmed fiſtula lachrymalis, the curative intention is, to form an opening between the lachrymal ſac and the correſponding noſtril. In a preceding ſection of this chapter, I have ſhewn that this is accompliſhed in different methods; by ſearching with a blunt probe, to diſcover the natural paſſage: if this fails, by making an artificial opening through the os unguis: And when neither of theſe ſucceed, by leaving a tube or canula, either in the natural or artificial opening,

for

for the purpoſe of conducting the tears to the noſe.

As we know from experience, that the operation fails frequently from the paſſage becoming again impervious, and this whether it may have been done by opening the natural paſſage or by forming another, it would be the idea perhaps of moſt practitioners to leave a tube in the opening, were it not liable to one very important objection, namely, the uncertainty of its continuing fixed in its ſituation: For hitherto we have not been poſſeſſed of any certain method of preventing the canula either from riſing and forcing its way out at the corner of the eye, or from paſſing down and coming out at the noſe. In Plate XX. I have delineated various forms of tubes that have been uſed for this purpoſe; and of theſe, figures 3. and 10. will frequently be found to anſwer: For when preſſed ſufficiently into the opening through the os unguis, the bulge or prominence with which they are furniſhed above, for the moſt

moſt part prevents them from riſing, while their conical ſhape prevents them from paſſing into the noſe. I muſt, however, acknowledge, that they ſometimes fail; and that an invention of Mr Pellier's anſwers better. Mr Pellier aſſerts, that when properly introduced it never fails; and from any experience that I have had of it, I am clearly of the ſame opinion. In a patient of mine, on whom the operation was performed upwards of eleven years ago, the tube is ſtill firm and immoveable, and anſwers the purpoſe of giving a free paſſage to the tears. Two repreſentations of this tube are given in Plate XXV. figures 5. and 6. They may be made either of gold or lead. Mr Pellier commonly employs lead: But when of gold, the tube is not ſo bulky if of the ſame ſtrength; and as this metal receives a finer poliſh, by which the opening through it is not ſo readily filled up with the tears, it ought, I think, to be preferred.

The

The peculiarity of form of Mr Pellier's tubes conſiſts in their having two projecting edges; one at the top forming a kind of brim, correſponding as nearly as poſſible to the ſize of the lachrymal ſac; and the other near to the middle between this and the other end of the inſtrument; by which means, when properly fixed in the paſſage where it is to remain, it is kept firm in its ſituation by the granulations that ſhoot out from the contiguous parts; and which, by graſping as it were that part of the tube which lies between the two projecting edges, effectually prevent it from paſſing either upwards or downwards; and hence that material inconvenience is avoided which practitioners who employ cylindrical tubes always complain of.

It is neceſſary, however, to obſerve, that the utmoſt nicety is required in the uſe of theſe as well as of every variety of tube; in the firſt place, in adapting them with exactneſs to the ſize of the openings through which they are to paſs; and afterwards

erwards in aſcertaining the depth to which they ſhould be preſſed into the oſe: For if a tube be either too ſmall or oo large for the opening through the os nguis, we may readily imagine that it ill not anſwer; and if it is preſſed even n a trifling degree too far into the noſtril, it will neceſſarily irritate the lining membrane of that cavity ſo as to create much pain and inconvenience. The tubes repreſented in Plate XXV. are of a ſize both in length and thickneſs that anſwer for the moſt part of adults, but practitioners ſhould be provided with them of various ſizes.

The method of uſing them is this. After laying the lachrymal ſac freely open in the uſual way, the natural conduit of the tears is ſearched for, either with a firm probe, or with the conductor, Plate XXV. fig. 2.; and Mr Pellier aſſerts that he never fails in finding it. As ſoon as this is diſcovered, the tube muſt be put upon the conductor, previouſly furniſhed with the compreſſor, fig. 3. as in fig. 4.; and

and the tube ſhould be of ſuch a ſize that the conductor may fit it exactly in point of thickneſs, while the end of this inſtrument is ſo much longer as to paſs through it about the tenth part of an inch. The point of the conductor is now to be inſinuated into the lachrymal duct; and being puſhed in till it reaches the noſtril, which may be known either by inſerting a probe into it, or by a few drops of blood being obſerved to fall from the noſe, the conductor being no longer neceſſary, muſt be withdrawn, taking care to leave the compreſſor upon the upper brim or edge of the canula; which muſt be firmly preſſed down with it in the left hand, while the conductor is removed with the other. If this precaution be not attended to, the canula would be brought out along with the conductor; but this inconvenience is in this manner very effectually prevented, while the ſame inſtrument ſerves more eaſily than any other to preſs the canula to a ſufficient depth in the lachrymal duct: A point of

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he firſt importance in the performing of his operation; for if the canula be not fixed with ſome degree of firmneſs even at the firſt attempt, there will afterwards be more pain and difficulty in doing it.

This being done, the compreſſor muſt next be taken out; and, with a view to diſcover whether the canula is at a proper depth or not, a little milk and water ſhould be injected through it with the ſyringe, Plate XX. fig. 1. If the injection paſſes freely and eaſily into the noſtril, while the upper part of the canula is preſſed down to the middle of the lachrymal ſac, there will be no reaſon to doubt of its being properly placed: If, on the contrary, any obſtruction occurs, there will be reaſon to ſuſpect that it is already puſhed too far, and that it preſſes againſt the os ſpongioſum inferius; in which caſe the canula ſhould be withdrawn, with a view to ſhorten it, when it muſt be again introduced in the manner I have mentioned.

As the wound recently made in the ſac will yield a conſiderable quantity of matter, it is neceſſary to preſerve it open for eight or ten days with a bit of ſoft lint ſpread with any emollient ointment, taking care to cover the whole with a compreſs of ſoft old linen, ſecured with a proper bandage. An injection of milk and water ſhould be daily paſſed through the canula; and at the end of this time, or whenever the ſuppuration is much diminiſhed, and the ſore looking clean and in a healing ſtate, the doſſil of lint ſhould be removed; and a piece of court-plaſter being laid over the ſore, it may in this ſtate be left to heal, care being taken to renew the plaſter occaſionally if any matter appears to form beneath it.

By this mode of treatment, caſes of fiſtula lachrymalis that do not depend upon diſeaſed contiguous bones or any latent diſeaſe of the conſtitution, will for the moſt part, as Mr Pellier obſerves, be completely cured in three weeks, nay ſometimes in a fortnight, which by the uſual

nſual practice might require three, four, or five months.

In Plate XXVI. I have delineated the form of tube, as well as all the other parts of the apparatus employed for this operation by Mr Wathen; but although the invention is ingenious, and may anſwer in a great proportion of caſes, as Mr Pellier's tubes appear to me to be better adapted to the form of the lachrymal paſſages, while his mode of introducing them is more ſimple, I think it probable that they will meet with a preference.

As I have been witneſs of the moſt complete ſucceſs of Mr Pellier's practice in this diſeaſe, I have conſidered it as a point of juſtice, not only to Mr Pellier but to the Public, to give this full detail of it. Indeed, if I had not been convinced of the ſuperior utility of Mr Pellier's practice, and of the unreſerved manner in which he communicated his knowledge of the diſeaſes of the eyes, I ſhould have deemed it imperinent, to have

given the preceding account of either to the Public.

Since the firſt edition of this volume was publiſhed, the opinion which I then ſuggeſted, of the impoſſibility of extracting the capſule of the lens entire, has been the ſubject of much inveſtigation: And as it now appears that it cannot be done, I ſtill conclude, that Mr Pellier, and others who adopted a different opinion, have been deceived.

CHAP-

CHAPTER XII.

Of the DISEASES *of the* NOSE *and* FAUCES.

SECTION I.

Anatomical Deſcription of the NOSE *and* FAUCES.

A MINUTE deſcription of theſe parts is not neceſſary for our purpoſe; but a few remarks upon their general form and ſtructure may ſerve in ſome meaſure to elucidate the nature of the diſeaſes to which they are liable.

The external prominent part of the noſe is chiefly compoſed of bones and cartilages, which ſerve to protect the more deep-ſeated parts of the organ of ſmell, and to form a kind of vaulted paſſage for the air to the throat.

This paſſage, divided by the ſeptum naſi, forms the noſtrils, which extend almoſt in a horizontal direction from the ſuperior part of the upper lip backwards to the pharynx, where they terminate above the velum pendulum palati.

The ſuperior and lateral parts of the arch of the noſe are formed by the naſal proceſs of the os frontis,—by the two oſſa naſi,—by the oſſa unguis,—and by an extenſive proceſs from each of the oſſa maxillaria, to which the cartilaginous alæ of the noſe, covered by the common teguments, are immediately attached.

The ſeptum narium is formed by the naſal proceſs of the ethmoid bone,—by the

the vomer,—by the middle cartilage of the noſe,—and by the ſpinous proceſſes of the palate and maxillary bones.

The under part of the cavity of the noſe is anteriorly bounded by a horizontal proceſs of the oſſa maxillaria, and backwards by a proceſs of a ſimilar form, from each of the oſſa palati. The ſphenoid and ethmoid bones form the boundaries of the poſterior part of the nares.

Towards the upper part of the noſe, we meet with a very beautiful contrivance of nature for enlarging the organ of ſmell. In the ſuperior part of each noſtril, oppoſite to the ſeptum, we find a ſpongy, cellular production of bone, proceeding from the os ethmoides, which, from their form, texture, and ſituation, are termed Conchæ, Oſſa Spongioſa, or Oſſa Turbinata Superiora: And beneath theſe, on the ſame ſide of the noſtrils, are two bodies of a ſimilar texture, which have likewiſe been ſuppoſed to be productions of the ethmoid bone, but of which there is no evidence. Theſe, from their ſituation, are termed

Oſſa Spongioſa Inferiora. In ſome inſtances, two, and even three, ſmall bones of this kind have been met with in each noſtril; but this is not a frequent occurrence.

Theſe bodies being prominent, and even ſomewhat irregular on their ſurfaces, give the noſtrils a winding, or even a crooked appearance: But every practitioner will know that they are ſo in appearance only; inſomuch that a common probe may be paſſed almoſt in a ſtraight line from the external nares to the throat.

We meet with ſeveral openings which terminate in the noſtrils, ſome of which it is material for ſurgeons to be acquainted with; viz. The ductus inciſorii, which commence at the under and back part of the noſtrils, and terminate behind the dentes inciſivi of the upper jaw;—the ſinuſes of the ſphenoid and frontal bones, which both open into the upper part of the nares;—the ſinus of each maxillary bone, commonly termed the Antrum Maxillare, or Highmorianum, which opens into

to the noſe between the upper and under oſſa ſpongioſa of the ſame ſide;—and laſtly, the ducts of the lachrymal ſacs, which in the preceding Chapter I have had occaſion to deſcribe, and which terminate on each ſide immediately beneath the os ſpongioſum inferius.

All the cavity of the noſtrils; the different ſinuſes I have mentioned, as well as the paſſages leading to them; the whole ſurfaces of the oſſa ſpongioſa, and even the fauces, are covered or lined with a thick ſoft membrane, which, from its affording a plentiful ſecretion of mucus, is commonly termed Membrana Pituitaria, or Membrana Schneideri, from Schneider, the firſt anatomiſt who gave an accurate account of it.

This membrane appears to be a continuation of the cuticle. Towards the external nares, near to its connection with the epidermis, it is exceedingly thin; but as it proceeds backward upon the ſeptum naſi and on the oſſa ſpongioſa, it acquires a conſiderable degree of thickneſs; and

again becomes thin as it proceeds to line the different ſinuſes.

The cavity of the noſe, as I have already remarked, is ſeparated from the mouth by a plate of bone, formed by a proceſs from each of the oſſa maxillaria, and by the oſſa palati. To the poſterior edge of the laſt mentioned bone there is a firm membrane connected, termed the Velum or Valvula Palati, formed by a junction of the common membrane of the mouth, with a continuation of the Membrana Schneideri, together with ſeveral muſcular faſciculi, intended for the motion of this and the contiguous parts. This membrane, as it ſtretches back from the palate, falls down and terminates in the uvula immediately above the root of the tongue; by which it is not only well fitted for preventing the food, during maſtication and deglutition, from paſſing up to the noſe, but for conveying backwards to the pharynx all ſuch parts of the mucus furniſhed by the membrane of the noſe

and

and contiguous ſinuſes as are not diſcharged by the external nares.

On each ſide of the throat, at the termination of the velum pendulum palati, there is ſituated a prominent glandular ſubſtance, commonly termed the Amygdalæ or Almonds of the Ear. They are naturally of a ſoft, yielding texture; and in general they have evacuations of different degrees of deepneſs on various parts of them, which, by thoſe not acquainted with the uſual appearances of theſe parts, are often miſtaken for ulcerations. On looking farther into the throat, along the courſe of the tongue, a thin, elaſtic, cartilaginous body is obſerved, termed Epiglottis, which is ſo placed as to prevent the food from falling into the trachea in its paſſage from the mouth to the pharynx, a wide capacious bag, which terminates in the œſophagus, and occupies all that part of the throat that is ſeen on looking into the mouth.

From this deſcription it is evident, that the pharynx is furniſhed with ſeveral open-

ings or outlets. Below, it terminates in the œſophagus;—anteriorly, it communicates directly with the mouth;—and from the ſuperior part of the bag it has a free direct communication with the poſterior openings of the noſtrils.

We ſhall now proceed to conſider the diſeaſes of theſe parts, and the operations that are practiſed for them. The ſubjects to be treated of are,—Hemorrhagies from the Noſtrils—Ozæna—Imperforated Noſtrils—Polypous Excreſcences in the Noſe and Throat—Extirpation of the Amygdalæ and Uvula—Scarifying and Fomenting the Throat.

SEC-

SECTION II.

Of Hemorrhagies from the Nostrils.

THE internal parts of the nose are supplied almost entirely with blood from the internal maxillary artery: And, in general, the branches of this artery that go to the nose are so small, as to render a division or rupture of any of them an object of little importance. In some instances, however, it is otherwise, and hemorrhagies occasionally occur from these parts that give much anxiety and distress to practitioners, and prove very hazardous to patients. They have sometimes even baffled every attempt that could be made to restrain them. However trifling, therefore, this evacuation may for the most part appear, it ought always to be treated with attention.

In

In a great proportion of caſes, a proper application of cold puts a temporary ſtop to the diſcharge; and in general, any future returns of it may be prevented by blood-letting, a moderate uſe of cooling laxatives, and a low regimen.

In order to obtain all the advantages that may be derived from cold, it muſt be employed in various ways, and to a conſiderable extent. The patient ſhould be placed in a large apartment, with a current of cold air paſſing through it: His food and drink ought all to be cold: His face ſhould be frequently bathed, and even immerſed, in cold water, or in cold water with a proportion of vinegar: The mouth ſhould be kept filled from time to time with a cold ſolution of alum, or any other aſtringent: Compreſſes, wet in any liquid of this kind, ſhould be applied over the noſe: When in bed, the patient ſhould be lightly covered; and he ſhould ſleep with his head as high as poſſible.

By theſe means duly perſiſted in, naſal hemorrhagies may in general be removed;

ved; but in some instances no advantage is derived from them, the flow of blood not being in any degree diminished by the most exact application of them.

In such cases, compression of the ruptured blood-vessel is alone to be depended on; but when deeply seated in the nostril, the application of pressure is both difficult and uncertain. It will sometimes happen that a dossil of lint passed into the bleeding nostril will put an immediate stop to the discharge. This, however, is a rare occurrence; for the extent and diameter of the passage through which the dossil must be pushed being very unequal, the effect produced by it must likewise be so: From this circumstance, we cannot place much dependence on this method of applying pressure.

In former editions of this work, when treating of evacuations of blood from the anus in cases of piles, I advised the application of pressure, by the introduction of a piece of gut, tied at one end, into the rectum, and by filling it at the oppo-

site

ſite extremity with any cold liquid, to increaſe the degree of preſſure by forcing up the liquid and ſecuring it with a ligature. The ſame remedy may be employed in hemorrhagies from the noſe. It has already been ſucceſsfully made uſe of in a few inſtances; and may frequently, I think, be employed with advantage. A piece of hog's gut, that has been previouſly dried and moiſtened again, anſwers beſt. One end of it firmly tied with a bit of ſmall packthread, ſhould, by means of a probe or director, be puſhed along the whole courſe of the noſtril from which the blood is diſcharged, to the upper end of the pharynx. The gut ſhould now be filled with cold vinegar, water, or any other cold liquid, by means of a ſyringe inſerted at the end hanging out at the noſtril; and as much being injected as the gut will admit, the whole ſhould be preſſed as far up as poſſible, and ſecured in this ſituation with a firm ligature.

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In this manner a very considerable degree of pressure may be applied; and some advantage may be derived from the application of cold directly to the vessel from whence the blood is discharged. In some instances, however, even this may fail, owing to the ruptured vessel being so situated that pressure cannot in this manner be directly applied to it. In such circumstances, we must attempt by other means to put a stop to the hemorrhagy; and it may commonly be done in the following manner.

Let the curved instrument, fig. 4. Plate XXX. be inserted at one of the nostrils with a piece of catgut or firm waxed thread contained in it; and being conveyed into the throat, the ligature must be laid hold of with a pair of forceps, and taken out at the mouth, when the instrument is to be withdrawn and again introduced at the other nostril with a ligature of the same kind. A bolster of soft lint, of a sufficient size for stuffing or filling up the posterior nares, is now to be

firmly tied to the two ends of the ligatures hanging out at the mouth, when the oppoſite ends of them muſt be pulled forward at the noſtrils till the cuſhion of lint is firmly applied to and fixed in the upper part of the pharynx; when a compreſs of lint muſt be applied to each noſtril, and fixed in this ſituation by tying the two ligatures over it. The patient ſhould now be laid to reſt. If the bolſters of lint have been properly applied, no blood will eſcape either from the poſterior or anterior nares; any blood that is effuſed into the noſtrils will ſoon coagulate, and thus a ſtop will be put to the hemorrhagy. It is evident, however, that in order to inſure ſucceſs to this operation, the bolſters of lint ſhould not only be applied with much exactneſs, but continued for a length of time ſufficient for admitting of the healing or re-union of the ruptured blood-veſſels.

In fixing the bolſter of lint in the back part of the mouth, I have adviſed two ligatures to be employed; one to be paſſed through

through each noſtril. In this manner it may be applied not only more firmly, but more equally, than by the uſual method of only one ligature paſſed through that noſtril from whence the blood is diſcharged. I alſo think it right to remark, that a ligature ſhould be attached to the bolſter of lint in the pharynx, of a ſufficient length to hang out at the mouth, by which the bolſter may be withdrawn on the hemorrhagy being completely ſtopped: Otherwiſe, when the bolſter is firmly fixed behind the velum pendulum palati, it cannot be removed but with much trouble, both to the ſurgeon and patient, of which I have met with different inſtances: In one of theſe, after various attempts had been made for taking the bolſter away, it was allowed to remain for three or four weeks, till it fell into the throat in the night-time, when it nearly ſuffocated the patient before being got out.

SECTION III.

Of an Ozæna.

THE term Ozæna has in general been applied to ſuch ulcers of the noſe as are foul; that diſcharge a fetid matter, and are attended with a carious ſtate of one or more of the bones; whilſt by ſome the ſame general denomination of ozæna is applied to every ulcer in the noſtrils, whether attended with caries or not.—At preſent I ſhall adhere to this laſt acceptation of the term.

Every catarrh affecting the lining membrane of the noſe, is attended in a greater or leſſer degree with an inflamed ſtate of the parts in which it is ſeated. But we know, that in general this terminates eaſily, and that the inflammation is removed by a plentiful diſcharge either of mucus or thick yellow matter. In ſome inſtances, however, even after every o-

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ther catarrhal symptom is removed, this discharge of matter continues obstinate, either from ulceration alone, or perhaps from ulceration conjoined with fulness and swelling of the lining membrane of the nose.

Exposure to cold is to be considered as the most frequent cause of this state of the disease; but external violence of every kind that terminates in an inflamed state of the membrane of the nose, such as the application of acrid irritating substances, blows and bruises, may likewise produce it.

When the system is not otherwise diseased, this is the most simple variety of an ozæna; and as in this state we suppose the affection to be perfectly local, local remedies ought alone to be employed.

In this state of the disease, drying and astringent applications are chiefly to be trusted. Of these, decoctions of walnut-tree leaves, or of Peruvian or oak bark, mixed with a solution of alum, so-

lutions of white vitriol, and all the ſaturnine ſolutions, are perhaps equal if not preferable to any. Brandy or any other ardent ſpirits diluted with water, and lime-water, may likewiſe be employed with advantage.

Doſſils of ſoft lint ſoaked in any of theſe ſhould be introduced into the affected noſtril three or four times daily, and ſhould be puſhed up ſo as to be brought into contact with the affected parts: And every night at bed-time an ointment ſhould be applied, prepared with a conſiderable proportion of calcined zinc or lapis calaminaris.

By a due continuation of theſe means, almoſt every local affection depending on ulceration of the membrane of the noſe will at laſt be removed. But inſtances have occurred of other diſeaſes being miſtaken for ſores in the noſe, and of the running produced by them continuing to reſiſt every effort that could be made for removing it. This is particularly the caſe

case with collections of matter in the antrum maxillare.

In the anatomical description I have given of these parts, we have seen, that there is naturally a passage or opening from the antrum maxillare into the nose immediately below and covered by the os spongiosum inferius of the same side. In collections of matter in this cavity, when in considerable quantity, it is occasionally discharged by this outlet into the nose in every posture of the body, and almost always when the patient lies on the sound or opposite side, if the passage be not obstructed. The method of treatment best suited for the removal of collections in the antrum maxillare will be the subject of a section in the ensuing chapter: At present we have only to say, that in the treatment of diseases attended with a discharge of matter from the nose, practitioners ought to be on their guard, lest, by mistaking one disease for another, mischief may be done; not only by a misapplication of remedies, but by those

means being omitted from whence alone any real advantage could be derived.

When, again, the matter diſcharged from an ulcer in the noſe is thin, fetid, and of a brown or ſomewhat black colour, as this will give cauſe to ſuſpect that the contiguous bones are carious, it will be in vain to expect a cure till theſe are removed. We may in general be certain of the exiſtence of caries by the peculiar fetor of the matter that the ſores afford; but when any doubt remains of this, we have it commonly in our power to be determined with certainty by the introduction of a probe.

As a carious ſtate of the bones of the noſe occurs more frequently as a ſymptom of lues venerea, than from any other cauſe, this ſhould be kept in view in all affections of this nature: And whether we may be able to trace it with certainty as a ſymptom of this diſeaſe or not, whenever there is the leaſt cauſe for ſuſpicion, the patient ought, without heſitation, to be put upon a long continued courſe

courſe of mercury. From whatever cauſe the diſeaſe may ariſe, mercury will not probably do harm; and as I have ſeen it prove uſeful even where no venereal taint ever exiſted, I now in general, in all ſuch caſes, adviſe it immediately.

In the mean time the local treatment of the ſores ſhould not be neglected. The parts ſhould be bathed from time to time with one or other of the decoctions I have mentioned; and as the ſoft ſpongy bones of the noſe, are apt, when carious, to produce troubleſome fungous excreſcences; ointments, impregnated with corroſive applications, ſhould be employed occaſionally; and of theſe there are none I have ever employed that anſwer ſo well as prepared verdegris or red precipitate. A general prejudice indeed prevails againſt the uſe of remedies of this kind in diſeaſes of the internal parts of the noſe, from a fear of their doing miſchief, by irritating the very ſenſible membrane to which they are applied. There is no good cauſe, however, for this timidity;

and I can ſay from experience, that ointments, ſuch as I have mentioned, of a ſtrength ſufficient for keeping down funguous excreſcences, may be employed with much ſafety, and without any riſk of injuring the contiguous parts. It is ſcarcely neceſſary to remark, that in the uſe of remedies of this kind, ſome prudence and attention is required to adapt the ſtrength of them to the parts to which they are applied. The internal ſurface of the noſe will not bear the ſame degree of irritation that may with ſafety be applied to ſome other parts of the body; but it will bear the application of corroſive ointments more ſtrongly impregnated than is commonly imagined. A liniment compoſed of wax and oil, with an eighth or ninth part of red precipitate, may be employed with ſafety, and the corroſive powers of it can be occaſionally increaſed or diminiſhed. In uſing verdigris, from ten to twenty grains may be added to an ounce of liniment. The growth of fungous excreſcences being thus

thus prevented, and the ſores kept clean by the frequent uſe of an aſtringent antiſeptic waſh, the paſſage of the noſtril will be preſerved pervious, the diſeaſe will not ſpread ſo readily, and at the ſame time the carious bones will probably be more quickly ſeparated and thrown off than when theſe circumſtances are overlooked.

Till the caries is removed, no permanent cure can be expected. The treatment therefore that I have juſt pointed out ſhould be perſiſted in till this is fully accompliſhed. Indeed, after a ſufficient quantity of mercury is exhibited for the removal of any latent venereal taint that might exiſt in the ſyſtem, all that we can expect farther from art, is to aſſiſt in the manner I have adviſed, in effecting a ſeparation of ſuch bones as are diſeaſed. This being done, the ſores will aſſume a milder aſpect, and will in general heal by a continuance of the aſtringent applications alone.

This

This is the practice that by experience I have found to prove the moſt ſucceſsful in caſes of ozæna. It muſt however be acknowledged, that no remedies with which we are acquainted can with certainty be depended on: This kind of ulcer proves always tedious, not only from the difficulty of reaching the ſore with proper dreſſings, but from the oſſa ſpongioſa, when they become carious, being always ſlow in exfoliating. When however the ſyſtem is not otherwiſe diſeaſed, the means that I have mentioned will very commonly ſucceed at laſt.

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SECTION IV.

Of Imperforated Nostrils.

Children are not unfrequently born with the vagina or anus in an imperforated ſtate; and although we know of no reaſon why the noſtrils ſhould not alſo be frequently imperforated, we are certain that it is a rare occurrence. Every practitioner, however, muſt have met with ſome inſtances of preternatural adheſions of the noſtrils, the conſequence of confluent ſmall-pox, of burns, or venereal ſores.

Obſtructions of this kind are in various degrees. In ſome caſes the noſtrils are only ſlightly contracted, without producing any material impediment to reſpiration: In others, they are ſo much drawn together, as hardly to admit a common probe or a ſmall quill: And in a few, the paſſage is entirely obliterated.

In

In all ſuch caſes it is the object of ſurgery to remove every preternatural obſtruction; but as any operation for this purpoſe is productive both of pain and inconvenience, the aſſiſtance of art is not frequently deſired. It ought undoubtedly, however, to be employed whenever the breathing is much obſtructed, or the deformity produced by the diſeaſe is conſiderable.

When an opening is left in the obſtructed noſtril, however ſmall it may be, much aſſiſtance may be derived from it in effecting our intention. A ſmall grooved director being inſerted into it, the paſſage may be eaſily enlarged to its natural ſize, by running a ſmall biſtoury or ſcalpel into the groove in the courſe of the adheſion: But when there is no paſſage whatever, whether it may be the effect of a natural conformation, or of any other cauſe, we ſhould in the firſt place, by ſlow diſſection with a ſmall ſcalpel, endeavour to diſcover one of the noſtrils, taking care, with as much caution as poſſible,

sible, to keep the opening in a proper direction between the septum and the contiguous external cartilage: And the passage being once discovered, it must be enlarged to the natural size in the manner I have mentioned, by the introduction of a director and bistoury. This being accomplished in one nostril, we endeavour, by the same cautious dissection, to discover the other.

A clear opening being thus formed into each nostril, our next object is to preserve it of a full size, and to prevent the parts from adhering together; which by experience we know they are apt to do, and which much attention alone can prevent.

The introduction of dossils of lint of an adequate size, or of any other soft substance, and retaining them till there is no risk of future adhesions, taking care however to withdraw them daily for the purpose of cleansing or renewing them, might no doubt answer the purpose: But metallic tubes, adapted to the size of the openings,

openings, at the ſame time that they admit of a free reſpiration through the noſtrils, ſerve to diſtend the parts with more equality, and are more eaſily retained in their ſituation. Before being introduced, they ſhould be covered with ſoft leather ſpread with any emollient ointment; by which they ſit with more eaſe, and are more readily withdrawn at the different dreſſings.

Various forms of tubes have been recommended for this purpoſe. Thoſe repreſented in fig. 2. Plate XXX. are of a form that anſwer perfectly well; and they are eaſily retained either with a a bandage round the head, or with adheſive plaſters for attaching them to the contiguous parts. They ſhould be continued as long as any degree of ſoreneſs or excoriation remains in the courſe of the inciſions; for if withdrawn, before the ſores are completely healed, new adheſions or contractions will very certainly enſue.

It

It ſometimes happens from burns, as well as from the confluent ſmall-pox, that along with a contraction, or perhaps a total obliteration, of one or both noſtrils, an adheſion is produced between the noſe and the ſkin of the upper lip. In this caſe the adheſion of the lip to the noſe ſhould, in the firſt place, be removed with a ſcalpel; and the ſore thus produced ſhould be perfectly heal and firmly cicatriſed before we attempt to open the noſtrils. It is ſcarcely neceſſary to remark, that, during the cure, the ſore ſhould not only be kept properly covered, but with a view to remove any improper contraction which the lip may have acquired, it ought at each dreſſing to be tied down with ſeveral turns of a double-headed roller paſſed round and over the head.

SECTION V.

Of POLYPI *in the* NOSE *and* THROAT.

THE lining membrane of the noſe is liable to excreſcences, which, from their ſuppoſed reſemblance to inſects of that name, have commonly been termed Polypi. Every part of the naſal cavity, and of the back part of the throat, is liable to theſe excreſcences; but moſt frequently they ariſe from that part of the membrane of the noſe that lines or covers the oſſa ſpongioſa. For the moſt part they are confined to one ſide of the noſe, and they do not commonly appear ſo far back as the throat; but in ſome inſtances they occupy both noſtrils, and in others they are ſo large as to be diſtinctly perceived on looking into the pharynx. In ſome caſes, indeed, they are found to ariſe in the pharynx.

The

The firſt warning that a patient commonly receives of this diſeaſe, is a partial loſs of ſmell, attended with a ſenſation of fulneſs or obſtruction in ſome particular part of the noſe, very ſimilar to what is experienced from the ſtuffing of the noſtrils in a common cold or catarrh. This continues to increaſe, till a ſmall tumor or excreſcence is perceived in one, and ſometimes in both noſtrils; which in ſome inſtances never deſcends farther than to be merely perceptible when the head is ſomewhat elevated; while in others it falls a conſiderable way down upon the upper lip, and at the ſame time perhaps puſhes back into the throat.

In ſome this elongation of the tumor continues ſteady and permanent, while in others it retracts altogether within the noſtrils in dry weather, and protrudes only in rain; and more eſpecially in thick hazy weather. Indeed, the influence of weather on the ſize of theſe excreſcences is often aſtoniſhing. I have known ſome patients who in clear dry weather were

not known to labour under the diſeaſe, in whom the tumors always protruded to a conſiderable length on the leaſt tendency to a damp atmoſphere.

Theſe tumors are of various degrees of firmeſs. In a great proportion of caſes they are ſoft and compreſſible, but in others they are ſo firm as to be equally hard with cartilage: All kinds of them are apt to bleed on being fretted or roughly handled: But it is the ſoft ſpongy kind only that are ſo remarkably affected by changes of weather.

The colour of theſe tumors is likewiſe variable: For the moſt part they are ſomewhat pale and tranſparent, but in ſome inſtances they are of a deep red; and, ſo far as I have yet had opportunities of obſerving, I would ſay, that there is ſome connection between their colour and texture. The experience of others may lead to a different concluſion; but in the courſe of my obſervation it has uniformly happened, that the ſoft compreſſible polypus has been of a pale complexion, while

thoſe of a firmer texture have always been of a deep red.

In the commencement of this kind of tumor, the pain attending it is always inconſiderable; and in the ſofter kinds of it there is ſeldom much pain, even in its moſt advanced ſtages. But thoſe of a harder nature become painful as they increaſe in ſize, particularly on any cauſe of irritation being applied to them. In ſome inſtances they become unequal and ulcerated over their whole extent. In this ſtate, conſiderable quantities of a thin fetid matter are diſcharged; and if a cure be not obtained by extirpation, they are now very apt to degenerate into cancer. It is proper, however, to obſerve, that it is the firm fleſhy kind of polypi only that are apt to become cancerous, and that this change rarely or never happens with thoſe of a ſofter texture.

But although the ſofter kinds of polypi ſeldom end in cancer, and are rarely productive of much inconvenience in their early ſtages, or as long as they are con-

ſined to either of the naſal cavities; when more advanced, they are often attended with much diſtreſs. Beſides the trouble and perplexity which occurs from their falling down upon the lip, they ſometimes paſs ſo far back into the fauces, as not only to impede deglutition, but to obſtruct reſpiration; and in ſome inſtances they become ſo large, as not only to diſtend the ſofter parts of the noſtrils, but to elevate and even to ſeparate and diſſolve the firm bones of the noſe. This, indeed, is not a common occurrence; but every practitioner muſt have met with it: I have ſeen different inſtances of it.

Various opinions are met with in authors of the cauſe of polypous excreſcences. By ſome they are ſaid to depend moſt frequently upon a ſcrophulous taint; while others imagine, that a venereal infection often gives riſe to them.

I will not ſay that polypi do not occaſionally occur along with the venereal diſeaſe and ſcrophula. They may even be met with as ſymptoms of theſe diſeaſes.

But

But in ſuch inſtances I would conſider the general diſeaſe of the ſyſtem in no other light than as an occaſional or exciting cauſe of the local affection, for in almoſt every caſe of polypus a local injury may be traced as the cauſe of it; and from every circumſtance relating to the diſeaſe, I conclude, that it is always of a local and circumſcribed nature. For even where a polypus originates from a venereal infection, this particular ſymptom is ſo far of a local nature, that it remains fixed and permanent after the general taint of the ſyſtem is removed. Nor is it acted upon by any quantity of mercury that is given.

All the harder kinds of polypi may probably originate from the ſame cauſes that produce tumors of a ſimilar texture in other parts of the body; but in moſt inſtances they appear to be connected with, and even to proceed from, a caries of the bone beneath; and it is this chiefly which renders them more hazardous and much more difficult of cure than thoſe of

a ſofter nature, which, in general, I conceive to be produced by a mere diſtention or relaxation of the membrana Schneideriana. When any portion of this membrane becomes inflamed, either by the effects of cold or from external violence, if in this ſtate any part of its ſurface is ruptured or eroded, as frequently happens from picking or blowing the noſe too forcibly, a degree of weakneſs or relaxation is thus produced, that is apt to terminate in a fulneſs or prominency of the parts immediately affected; and this being increaſed by every ſucceeding cold, the diſeaſe we are now conſidering comes in this manner to take place.

The farther progreſs of the diſeaſe may depend on various cauſes; but in general it will advance quickly or ſlowly, according as the parts affected are more or leſs liable to inflammation. Thus I have known various inſtances of polypi remaining ſmall and ſtationary for a great number of years, when the patients have not been obliged to be much expoſed to the

the open air; while it commonly happens among poor people, who are exposed to every inclemency of weather, and who are therefore more liable to frequent returns of catarrh, that they advance with more rapidity.

In the treatment of every disease, it is a point of importance to be able to form a just prognosis, not only of the manner in which the symptoms may probably terminate, but of the effects to be expected from the remedies that may be employed for them; and in no instance is this more desirable than in polypous excrescences of the nose.

By some we are led to conclude, that polypi are always doubtful with respect to their termination: That for the most part they are even of a dangerous nature; and therefore that we should consider every person in whom they occur as in a state of hazard: Whilst others assert, that although they may occasionally excite some inconvenience, yet that they are seldom or never attended with risk.

Some,

Some, again, are ſo timid with reſpect to polypi, as to ſuppoſe that they ought never to be meddled with; and allege, that there is more chance of doing harm than good by any operation we can adviſe for removing them; whilſt by others we are told that they may be taken away with ſafety.

This difference of opinion in regard to the nature of polypi, and of the effects to be expected from the remedies employed for them, has ariſen in a great meaſure from authors not having diſtinguiſhed the different kinds of theſe excreſcences with ſuch preciſion as they ought to have done: For while in one variety of the diſeaſe there is little riſk to be dreaded, and no great cauſe to doubt of our being able to remove it; in others, there is undoubtedly a good deal of hazard, and much reaſon to fear that no remedies whatever will be able to prevent a return of it.

I have already obſerved, that polypi are of various degrees of firmneſs; and all

all the obſervation that I have been enabled to make of them, has led me to conclude, that in general the riſk with which they are attended is nearly in proportion to their firmneſs. The ſoft compreſſible polypi are not only leſs painful than the others, but they may at any time be removed with more ſafety. Indeed they are not commonly attended with pain; and it ſeldom happens that any material inconvenience occurs from their extirpation: But the firm fleſhy kind of polypi are in general not only painful, but more apt to return after being extirpated. In forming an opinion, therefore, of the probable event of polypi, this circumſtance of texture deſerves particular conſideration. In a ſoft, yielding polypus, if the conſtitution is healthy, we may perhaps in every inſtance give a favourable prognoſis: For as long as the diſeaſe remains of a moderate ſize, it ſeldom proves troubleſome, and therefore it ought not to be meddled with;

with; and again, when, by acquiring a great additional bulk, the removal of the tumor becomes neceſſary, it may always be undertaken with much probability of ſucceſs. But, on the contrary, in polypi of a fleſhy conſiſtence, and eſpecially when of a firmer texture even than this, the patient or his friends ought always to be informed of the riſk being conſiderable: For it frequently happens that they cannot be entirely removed; and even when this is eaſily and completely practicable, they are apt to regenerate, and in ſome inſtances, as I already obſerved, to become cancerous. In all ſuch caſes, therefore, a guarded prognoſis ſhould be given; otherwiſe, if the diſeaſe ſhould afterwards return, the operator would be juſtly blameable, at the ſame time that the operation itſelf would fall into diſcredit.

Indeed ſome practitioners are ſo averſe to this operation in all caſes of firm or hard polypi, that they always decline to meddle with them. As long as they remain

main ſtationary, and do not give pain, if they do not obſtruct the breathing or deglutition, they ought not to be touched: But whenever they become painful, and eſpecially when they have acquired ſuch a bulk as to obſtruct either the paſſage to the ſtomach or lungs, we ought certainly to endeavour to extract them, if this be not already rendered impracticable by their adhering through the whole of their extent to the bones of the noſe, and by theſe being rendered carious; which in the late ſtages of the diſeaſe is very frequently the caſe.

All the ſofter kinds of polypi, which are liable, as I have already deſcribed, to be affected by the ſtate of the weather, may frequently be prevented from becoming large by the uſe of aſtringent and eſcharotic applications, particularly by a ſtrong ſolution of alum, or white vitriol, the powder of calcined alum, a decoction of oak-bark, or the application of vinegar or ardent ſpirits. By one or other of theſe being applied from time to time over the ſurface of the tumors, I have known differ-

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ent inſtances of their being prevented for a great length of time from giving any kind of diſturbance; and, in ſome caſes where the remedy has been freely employed, they have at laſt ſhrivelled and become conſiderably leſs. It muſt be acknowledged, however, that they have never accompliſhed a cure; but it is a matter of no ſmall importance our being able by gentle means to render any painful operation unneceſſary.

On the firſt appearance, therefore, of a polypus, we ought by a free uſe of ſome aſtringent or eſcharotic application to endeavour to prevent its farther increaſe; but when theſe do not ſucceed, we are to conſider by what mode the tumor may be moſt effectually removed.

Various methods have been propoſed for the removal of polypi:—Namely, the uſe of cauſtic or corroding applications; —the actual cautery;—the paſſing of a ſeton or cord through the diſeaſed noſtril; —exciſion with a ſcalpel or ſciſſars;—the application of a ligature round the neck of

of the tumor;—and evulsion or extraction by a proper application of forceps.

An ignorance of the circulation of the blood, and of the easy method with which we are now acquainted of putting a stop to hemorrhagies, led in earlier times to the practice of removing tumors, wherever they were seated, by corrosive applications, and even by the use of the actual cautery. If this practice was considered as necessary in other parts of the body, it is not surprising to find it proposed for the removal of polypi in the nose, where the effects of hemorrhagies were more dreaded. Cauterising irons were therefore invented for this purpose, together with metallic tubes for conducting them. But even with the utmost attention the diseased parts cannot be destroyed without injuring the sound. Remedies of this kind are therefore very apt to do harm, so that they are now very generally laid aside; as are likewise all kinds of strong corroding applications, which are equally liable to uncertainty, by their being apt to spread to

the contiguous ſound parts of the noſe and throat.

As ſome have imagined that polypi may be removed, by inducing a ſuppuration upon them, it has been propoſed to inſert a cord of ſilk or cotton into the diſeaſed noſtril, and one end of it being taken out at the mouth, by daily drawing it, and covering that part of it that remains in contact with the tumor, with a ſlightly irritating ointment, thus to create ſome degree of inflammation and conſequent ſuppuration over it.

I will readily allow, that in this manner a plentiful flow of matter may be excited; but it is not probable that this can have much influence on the ſize of the tumor. Till of late indeed, it was imagined that the formation of pus is neceſſarily attended with a diſſolution of the ſolid parts in which it occurs. Upon this principle Mr Daran and others endeavoured to explain the operation of bougies in obſtructions of the urethra; and a ſimilar idea ſuggeſted the remedy of

of which we are now speaking, in polypous excrescences of the nose. But it is now known, as I have elsewhere fully shown *, that the dissolution of solid parts is by no means necessary for the formation of pus. It is also known, that in diseases of the urethra, bougies prove effectual only by their form, and by the pressure which they produce; and I have no difficulty in saying, that it is in this manner only, by which a cord, if it ever proves useful, can have any effect on polypi of the nose. As the passage of the nostrils is very unequal, being wider in one part than another, and as the roots of polypi are frequently so situated that no pressure can be applied to them, I am not of opinion that they can ever be removed by the action of a seton passed through the nose, as many have imagined. But after the extirpation of polypi in the manner I shall hereafter point out, if their roots are not entirely removed, some advantage may be derived from our endeavouring

* *Vide* Chapters I. and III.

deavouring in this manner to clear the paſſage more completely. It was for this purpoſe ſolely, I may remark, that the practice we are now conſidering was firſt propoſed by that judicious obſerver Monſieur Le Dran. But although it might, in this manner, ſometimes prove uſeful, yet from being troubleſome in the application, it has ſeldom been employed. We ſhall have occaſion however, in a ſubſequent part of this ſection, to ſpeak of it again.

In other parts of the body, the removal of tumors by exciſion is univerſally preferred to every other method; and it would likewiſe be ſo in polypi of the noſe, were it not for their inacceſſible ſituation. But we ſeldom find them ſituated ſo as to render this mode of treatment practicable; for although ſcalpels and ſciſſars of various forms have been invented for this purpoſe, the roots of polypi are in general ſeated ſo high in the noſtrils, and the paſſage is for the moſt part ſo completely filled by the tumor itſelf, as to render

render it always difficult, and often impossible, to remove them by excision.

But when it is found that the tumor originates from the under part of the nostril, and when the point of a scalpel can be made to reach the root of it, we ought, without hesitation, to employ this method of taking it away, even in preference to that by ligature: For in this manner the whole of the tumor may be more effectually removed; and in this situation there is no reason to be afraid of hemorrhagies, as compression can be readily applied to any blood-vessel that may be cut in the under part of the nostrils. We rarely find, however, as I have observed already, that a polypus is seated so far down in the nostrils as to render this method of treatment practicable.

It therefore appears that all the means we have yet considered for the removal of polypi in the nose, are either inadequate for the effect, or altogether inadmissible; and hence we are under the necessity of employing either the method

by ligature, or that by extraction with the forceps.

As the removal of a polypus, by tearing or twiſting it off, is attended with much more pain than the application of a ligature round the neck of it, the latter would always have been preferred, if it had been conſidered as equally practicable. And as we now know that it can be done in a very ſafe and eaſy manner, it will probably in future be very generally employed. The method I allude to, is that which Monſieur Levrette of Paris firſt recommended, for the removal of polypi in the vagina, and which we now find may be uſed with equal propriety in ſimilar affections of the noſe and throat. The following is the method of applying it in polypi of the throat.

Fig. 1. Plate XXXI. repreſents a piece of pliable ſilver wire paſſed through a double canula, and the wire ſhould be long enough, when doubled, as to paſs through the noſe into the pharynx. Let the wire be taken from the canula, and the doubling at the

end of it be slowly and gently insinuated through one of the nostrils: As soon as it appears in the throat, the operator, with his fingers inserted into the mouth, must open the double sufficiently for passing it over the pendulous extremity of the tumor; and having pressed it down to the neck or root of it, the two ends of the ligature hanging out at the nostril must be again passed through the canula; which is now to be pushed back along the course of the wire, till it comes in contact with the root of the polypus. The fingers should still be continued in the throat, to retain the ligature at the root of the tumor; and the canula being placed in the manner I have directed, the wire must be drawn tolerably tight; and the ends of it being fixed on the wings or handle of the canula, as in Plate XXXII. fig. 1. it must be left in this situation till the following day, when being again drawn somewhat tighter, and this being daily repeated, the tumor will fall off sooner or later, according to its size. When the excrescence is small,

it ſometimes drops off in the courſe of the ſecond day; and tumors of even a large ſize often come away on the third or fourth. It is better, however, to make the compreſſion in a more gradual manner: For when the wire is drawn with much force, inſtead of acting as a ligature, and removing the tumor by compreſſion, it removes it too quickly, by cutting it acroſs, and may thus be equally productive of hemorrhagies, as if the operation had been done with a ſcalpel.

In this manner, all thoſe polypi may be removed, that either originate in the throat, or that proceed back from the noſtrils into the fauces; and the practice may be extended even to thoſe that are deeply ſeated in the pharynx, if the ligature can be properly applied over them, either with the fingers, with the aſſiſtance of forceps, or with an inſtrument, ſuch as is delineated in Plate XXXIII. fig. 3. Some inſtances, indeed, have occurred, of excreſcences ſeated too far down in the œſophagus, for admitting of ligatures be-

ing applied upon them in this manner; nor is it admiſſible even where the upper part of the tumor is acceſſible, if the baſe or neck of it be ſo low down as to prevent the ligature from being applied to it. In the third Volume of the Phyſical and Literary Eſſays of Edinburgh, there is a caſe related in which a very ingenious method was put in practice by the late Mr Dallas, for ſurrounding a deep ſeated polypus with a ligature; and although inſtances of ſuch excreſcences are extremely rare, yet, as they are ſometimes met with, I think it right to give a delineation of the inſtrument which in this inſtance was ſucceſsfully employed.

In this caſe both breathing and deglutition were impeded by a large fleſhy excreſcence originating in the œſophagus, a conſiderable portion of which was thrown into the mouth, by every exertion to vomit; but it ſoon retracted and remained concealed within the pharynx till vomiting or retching was again excited. This portion of the tumor, which

occaſionally protruded, was entirely removed by the method I have mentioned, and which I have more particularly deſcribed in the explanation to Plate XXXIV. The patient was in this manner relieved from much inconvenience and diſtreſs; but another branch of the tumor that extended towards the ſtomach, becoming afterwards very large, he died of the effects of it, in about two years from the operation.

I think it right to remark, that this patient might probably have been ſaved by the uſe of the ligature and double canula, ſuch as I have deſcribed, and that in ſimilar caſes it is to be conſidered as perhaps the beſt means of relief. When a polypus is ſuſpected to have formed in the œſophagus, if no part of it is obſerved to protrude into the pharynx, there will be much cauſe to imagine that it proceeds down towards the ſtomach; ſo that, if the double of a piece of flexible wire be puſhed down the œſophagus, the pendulous part of the tumor may very probably be laid hold of in withdrawing it; or,

if

if one attempt ſhould fail, other trials may ſafely be made with it: And as ſoon as the double of the ligature is found to be firmly fixed, all that portion of the tumor which it ſurrounds, may be eaſily removed by the application of the double canula, in the manner I have adviſed. It is proper, however, to obſerve, that the ligature and canula ſhould both be carried through one of the noſtrils into the œſophagus; for in this manner they will not prove ſo troubleſome as when paſſed through the mouth, and they may be applied with equal eaſe and advantage. For this purpoſe the canula muſt have ſome degree of curvature, as is repreſented in Plate XXXI. fig. 2.

In a great proportion of caſes ligatures may be applied round polypi of the back part of the noſe and throat, in the manner I have directed, and without interrupting reſpiration; but when deeply ſeated in the œſophagus, and on all occaſions when the application of the ligature is difficult and tedious, it is proper to ſecure

cure an eaſy and free reſpiration during the operation, by previouſly adviſing bronchotomy. By this no additional riſk is incurred, for it may with eaſe and ſafety be accompliſhed; and it puts it in our power to finiſh the operation more perfectly than we otherwiſe could do. It is likewiſe proper to remark, that although the operation may often be done without any aſſiſtance from a ſpeculum oris, yet, whenever it proves tedious, and when the ligature cannot be eaſily applied, this inſtrument ſhould be employed.

I have now to mention the method of applying a ligature to a polypus ſeated in the anterior part of the noſe, and which, inſtead of paſſing back into the pharynx, proceeds down one of the noſtrils towards the upper lip. Let the double of the ligature be paſſed over the moſt depending part of the polypus, and be ſlowly puſhed up to the root of it with the ſlit probe, Plate XXXIII. fig. 2. The probe being given to an aſſiſtant to preſerve the ligature in this ſituation, the two ends of it muſt be

be passed through a double canula; which being inserted into the nostril on the opposite side of the polypus, and being pushed easily along till it reaches the root of it, the ligature must now be drawn so tight as to make some impression on the root of the tumor, when the ends of it must be tied to the wings of the instrument, and daily pulled somewhat tighter, till the tumor drops off.

In this manner almost every polypus in any part of the nose may be extirpated. Those who have not seen it put in practice, may be apt to doubt of this assertion; but a few trials will show that it is not only the most effectual method, but the safest and easiest that has yet been proposed of removing polypi of every kind: It also has the advantage over every other method of applying ligatures upon polypi in the nose, of answering equally well in the large as in the smaller kinds of them—and it may even be applied where the tumor is so large as to distend the nostril to a considerable size. In Plate XXXIII. fig. 1. there

there is delineated a remarkable form of a polypus extirpated in this manner, under the direction of Dr Monro, who was the firſt, I muſt obſerve, who put in practice this method of removing polypi from the noſe and fauces. This polypus filled the noſtril completely; to ſuch a degree indeed, that it could not have been removed in any other manner; not even with forceps, for the blades of the inſtrument could not have been inſerted.

Beſides this, another method has been propoſed of applying ligatures round polypi in the noſtrils: By introducing a ligature through the noſtril in which the tumor is ſeated, puſhing it back to the throat, and paſſing it in ſuch a manner that the doubling may include the root of the polypus, if the oppoſite ends of it be taken out at the mouth, they may be ſufficiently twiſted, it is alleged, for removing the tumor.

In a few caſes this might poſſibly anſwer, but it would often fail: I think it right, however, to mention it, as it is recommended

commended by a very judicious practitioner, Mr Cheſelden. Fig. 2. Plate XXXII. exhibits a repreſentation of a polypus ſurrounded with a ligature in this manner.

Various forms of forceps have been invented for the purpoſe of removing polypi. Thoſe that anſwer the intention beſt, and now moſt generally uſed, are repreſented in Plate XXXV. Thoſe of a ſtraight form are intended for extracting polypi by the anterior nares, and the crooked forceps are employed by ſome for the removal of thoſe excreſcences which paſs into the throat behind the uvula. I have ſhown indeed that polypi of this kind may be more eaſily removed with ligatures, but I think it right to delineate ſuch forms of forceps as are uſed by thoſe who prefer a different method.

In proceeding to extract a polypus with forceps, the patient ought to be firmly ſeated, with his head leaning back, and ſupported by an aſſiſtant behind; and as it is of much importance, our being able to diſcover as nearly as poſſible the origin

gin of the excreſcence, ſome advantage may be obtained from the face being placed in ſuch a manner that the light of a clear ſun may fall into the noſtril.

In the ordinary method of performing this operation, the ſurgeon now takes the forceps, fig. 2. Plate XXXV. and inſerting one of the blades on each ſide of the polypus, he carries them eaſily along till he brings their points as near as poſſible to the neck of it, when he lays hold of it firmly, and endeavours to extract it entire, either by pulling directly downwards, or by moving the forceps from one ſide of the noſtril to another; or, as ſome more properly adviſe, by turning or twiſting the polypus round, till it is completely ſeparated. By this laſt method I think it probable that the root or attachment of the excreſcence will be more readily looſened than in any other way, at the ſame time that that part of the lining membrane of the noſe will not be ſo much injured as when the tumor is torn away by

by being pulled either laterally or in a perpendicular direction, downwards.

When a polypus is of a firm texture, if the operation is properly conducted, we may frequently be able to bring it all away at once: But when soft and yielding, it commonly requires repeated applications of the forceps; and we should never desist, as long as any portion of it remains that can with propriety be removed.

It is proper, however, in this place to observe, that the first application of the forceps is commonly attended with such a great discharge of blood, that beginners are apt to desist before the operation is nearly finished, from their being afraid of fatal consequences from the hemorrhagy; but this ought not in general to be regarded, as long as by a farther use of the forceps, we can extract any more of the polypus. And even when the operation is finished, if the patient is in any degree robust and plethoric, some advantage may ensue from a farther discharge, by which inflammation may be prevented, which

which otherwiſe might produce very troubleſome conſequences. Profuſe hemorrhagies from this operation ſeldom happen; by no means ſo frequently as thoſe are apt to imagine who have not often had occaſion to practiſe it. I will not pretend to ſay that inſtances may not occur of more blood being loſt by this operation than is proper; but I can ſafely aſſert, that it is not a common occurrence. When it is found, however, that the hemorrhagy is proceeding too far, we ſhould immediately employ thoſe means that we know from experience are moſt effectual in putting a ſtop to it; but theſe having already been fully treated of in Sect. III. of this Chapter, it is not neceſſary to enter upon them at preſent.

As it ſometimes happens that ſome parts of the roots of polypi are not extracted by the forceps, we are deſired by ſome practitioners to deſtroy them, by inſerting cauſtic or corroſive applications into the noſtrils immediately after the operation. Unleſs, however, we can evidently obſerve

ſerve the ſpot on which the cauſtic ſhould be applied, I am clearly of opinion that this practice ſhould not be adopted; for otherwiſe we muſt work entirely at random, and will more probably do harm than good. But when, by expoſing the noſtril to a clear light, we can bring the ſeat of the excreſcence into view, we may with propriety touch any parts of it that remain, with a piece of lunar cauſtic, properly covered with a canula in order to protect the contiguous ſound parts. An inſtrument for this purpoſe is repreſented in fig. 1. Plate XXXIV. This, however, ſhould not be attempted on the day of the operation, as is commonly adviſed; for while any diſcharge of blood continues, a clear view of the parts affected cannot be obtained: But it may with propriety be done on the following day; and the cauſtic ſhould be repeated every ſecond or third day, as long as any remains of the excreſcence are obſerved.

When, again, the root of a polypus lies ſo deep that it cannot be diſcovered, if we

find, either by the introduction of a probe, or by the breathing through this noſtril not being free, that the excreſcence is not entirely removed by the forceps, although, for the reaſons I have mentioned, cauſtic ſhould not in this ſituation be employed, it may be extremely proper to endeavour to deſtroy it by means of a more harmleſs nature. In this caſe, the practice I have deſcribed, of paſſing a ſeton through the noſtril into the throat might ſometimes prove uſeful; but the ſame intention may be accompliſhed with more certainty by the uſe of a large bougie. I ſhall hereafter have occaſion to remark, that in the removal of obſtructions in the urethra, bougies ſeem to operate chiefly by mechanical preſſure; and there is cauſe to imagine, that upon the ſame principle they may be employed with advantage for the removal of thoſe parts of polypous excreſcences in the noſtrils that cannot be taken away with the forceps. Nay more, were we conſulted early in the diſeaſe, before the excreſcence has

has acquired any conſiderable bulk, they might, I think, be ſucceſsfully employed in preventing their farther increaſe; and if duly perſiſted in, they might, in ſome inſtances, in this incipient ſtate of the diſeaſe, remove them entirely. Practitioners, however, are ſeldom adviſed with, till the diſeaſe has gone too far to admit of this. I have only had one opportunity of trying it; but in this caſe, the effects of it were ſuch as to juſtify our putting it to the teſt of future experience.

This was the opinion that I publiſhed of this remedy ſeveral years ago, and ſince the former editions of this work were printed, I have had many opportunities of putting it to trial. In all it gives great relief, by enabling the patient to breath with more freedom through the noſe, and in ſome it has entirely removed the diſeaſe. It is not, however, the common bougie that I employ, but a piece of bougie plaſter, rolled up into a flat form, nearly of the breadth and thickneſs of the forefinger of an adult; and of a length to

paſs into the pharynx, while half an inch or thereby remains out of the noſtril. The plaſter ſhould be of a firm conſiſtence; the plug ſhould be perfectly ſmooth; and if well covered with oil, it may be eaſily paſſed, even where the excreſcence is ſo large as to fill a conſiderable part of the noſtril: The patient is ſoon able to inſert it himſelf, and by doing it every night at bed-time, and withdrawing it in the morning, it gives him no great inconvenience in the application, while it commonly ſoon affords relief to the ſtate of his breathing.

The perſon in whom this mode of treatment was firſt employed, had for ſeveral weeks complained of a kind of ſtuffing, and interruption to breathing in one of his noſtrils. On looking into it I clearly ſaw and touched with the probe, a ſmall, pale coloured, ſoft polypus, at a conſiderable depth. As it did not yet produce much inconvenience, I did not think of adviſing it to be extracted; but conſidering it as a fit caſe for trying the effects of

of compression, a roll of bougie plaster of a proper size was introduced along the course of the nostril; and being gradually increased in size, the passage through the nostril became clear and pervious; and in the course of seven or eight weeks the excrescence disappeared almost entirely: But the patient was at this time obliged to go abroad, and I have not since heard of him.

In the latter part of the treatment of this case a silver tube covered with plaster was employed; by which the breathing went freely on; and being of such a length as to pass into the pharynx, it was easily kept inserted, and it was prevented from falling out or from passing back to the throat, by a piece of adhesive plaster connected with it by means of a strong thread being applied across the upper lip.

In describing the operation of extracting polypi, I proceeded upon the idea of the forceps in common use being to be employed; and when the excrescence is small, they answer the purpose as well as

any other: But when the polypus is ſo large as nearly to fill the noſtril, they cannot be either eaſily or properly applied: For the two blades of the forceps being both introduced at once, they cannot but with much difficulty be puſhed deep into the noſtril already much obſtructed; and the more they are preſſed forward upon the excreſcence, and the nearer it is brought to the axis of the inſtrument, the more widely the blades of it are neceſſarily opened at their extremities; by which the tumor cannot be ſo equally compreſſed, nor is there ſuch a chance of extirpating the root of it by means of them, as if they were ſo conſtructed as to apply preſſure equally through their whole length.

To remedy theſe inconveniencies, ſeveral improvements have been propoſed; but the beſt I have met with is one by the very ingenious Dr Richter of Gottingen. A repreſentation of it is given in Plate XXXV. fig. 3. This inſtrument may be uſed in the ordinary way by introducing

both blades at once when the polypus is ſmall; but when the tumor is large, it anſwers better to introduce the blades ſeparately as is done with midwifery forceps. One of the blades being carried ſlowly and cautiouſly forward along the courſe of the polypus, the other muſt in like manner be introduced at the oppoſite ſide of it, ſo that they may now be firmly locked together at the joint. The blades are accordingly made to ſeparate eaſily, and to fix in ſuch a manner as to admit of their being employed in the way I have mentioned.

Theſe and every other variety of forceps employed for this operation, ought to be as thin and ſlender in that part of them which is inſerted into the noſe as the nature of the diſeaſe will admit; for I muſt again obſerve, that the ſtraitneſs of the part in which we have to operate, is one of the principal difficulties we have to encounter. But when the forceps are made of well-tempered ſteel, they need ne-

be ſo thick and bulky as they are commonly made.

When, however, polypi have acquired a large ſize, the obſtruction they produce in the noſtril is in ſome inſtances to ſuch a degree, that no forceps can be inſerted: In ſuch circumſtances, as a conſiderable ſpace may be gained by laying the noſtril open, it may in ſome inſtances be proper to divide the cartilaginous part of it by a longitudinal inciſion; and, after extracting the tumor, to reunite the divided parts either by adheſive plaſters or with one or more ſutures.

At the ſame time, however, that I mention this, I think it right to obſerve, that it is a meaſure which ought not in any inſtance to be haſtily adopted; but I alſo think, that it ſhould not be univerſally condemned, as we find it to be by ſome practitioners. I do not imagine that it would in every caſe prove ſucceſsful: But when a polypus has already become ſo large as entirely to fill the noſtril; when therefore no forceps can be inſerted for removing

removing it; when the tumor is ſtill continuing to increaſe; and when of courſe there is much reaſon to ſuſpect that it may terminate fatally if it be not extracted; it will ſurely be better to give the patient any ſmall chance that may be derived from the practice I have mentioned, than to leave him to die in miſery; which in all probability he would do were no attempt made for his relief. If on laying the noſtril open, it is found that the tumor can be with ſafety removed with forceps, a complete recovery may poſſibly be obtained; and thus the pain that the patient has ſuffered, and the trouble of the operator, will be amply rewarded, whilſt at the ſame time no material injury will be done nor no kind of riſk incurred, if on laying the parts open, it is unfortunately found that no part of the tumor can with propriety be taken away.

In the firm fleſhy kind of polypi, which in ſome inſtances degenerate into cancer, when it is found that the tumor is already in a ſtate of ulceration, and that the con-

tiguous cartilages and bones of the noſe are diſeaſed, it would no doubt be imprudent to adviſe the treatment I have mentioned, for no advantage would probably accrue from it; the patient would be made to ſuffer a great deal of unneceſſary pain; and the operation itſelf would be brought into diſrepute: but in the ſofter kinds of the diſeaſe, which rarely or never become cancerous, and when the more external bones and cartilages of the noſe are not affected, we ought without heſitation to adopt it, when the tumor, as is here ſuppoſed to be the caſe, is meant to be removed with the forceps, and when this cannot be done in any other manner.

In the caſe of a firm fleſhy excreſcence, which filled the noſtril ſo completely that the forceps could not be introduced for removing it, a method was put in practice by Dr Richter for reducing the ſize of it; which to a certain degree anſwered the purpoſe, and afforded conſiderable relief. A hole or opening was made through the centre of the excreſcence by puſhing

ſhing a common trocar through the whole length of it, after being made red hot and covered with a canula. By this means a paſſage was formed through which the patient breathed eaſily, and the tumor was much leſſened; but the Doctor was unfortunately prevented from attempting to complete the cure, either by extraction or otherwiſe, by the patient leaving the place.—This caſe, however, affords an uſeful practical hint, and points out a mode of treatment which in tumors of this particular kind may in ſome inſtances be ſucceſsfully employed *.

I have thus deſcribed the method of extracting polypi of the noſe with forceps; but I muſt again remark, that they may be removed both with more eaſe and ſafety with the ligature: And as this mode

* For a more particular account of this caſe, and of the forceps mentioned above, V. Auguſti Gottlieb Richteri Obſervationum Chirurgicarum faſciculus ſecundus. Gottingæ, 1776.

mode of operating is admiſſible in a great proportion of caſes, it ſeems only to require to be more generally known to be very univerſally preferred.

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SECTION VI.

Of Extirpation of the Tonsils.

THE Amygdalæ or Tonsils are frequently, even in a natural state, so large as almost to fill up the passage from the mouth to the throat. As long, however, as they remain sound, and are not attacked with inflammation, any inconvenience that they produce is seldom of much importance: But tonsils of this enlarged size are very apt to inflame on the patient being much exposed to cold; and frequent returns of inflammation are often attended with such an addition of bulk as to produce nearly a total obstruction to the passage of food, drink, and air.

It is this enlarged state of the amygdalæ that in general is termed a schirrous state of the Tonsils; but I think it right to observe, that the term Schirrus appears here to be very improperly applied; for, excepting

cepting the circumſtance of a firm tumor, every other characteriſtic of ſchirrus is here very commonly wanting. A real ſchirrus is attended with frequent ſhooting pains, and it very commonly terminates in cancer: Now we know, that pain very ſeldom occurs in caſes of enlarged tonſils, except from inflammation: While in an inflamed ſtate, they are frequently indeed very painful; but as ſoon as the inflammation ſubſides, no more pain is experienced, and they remain perfectly eaſy and indolent till the patient is again expoſed to cold. This, however, is never the caſe with ſwellings of the real ſchirrous kind; for whenever they become painful, they uniformly proceed to turn worſe: And, again, enlarged tonſils are ſeldom or never known to terminate in cancer. I never knew an inſtance of their doing ſo; and few practitioners, I imagine, have met with it.

Mr Sharpe, when treating of this ſubject, recommends a more frequent extirpation of enlarged, or what he terms Schirrous

ous Tonsils, than what has hitherto commonly prevailed; and he is induced to do so, from having observed that the disease never returns, as it too frequently does after the extirpation of schirrous tumors in other parts. His words being much in point, I shall transcribe them. "All other tumors of the schirrous kind, whether of a scrophulous or cancerous nature, are subject to a relapse; the poison either remaining in the neigbourhood of the extirpated gland, or at least falling on some other gland of the body. In this case, I have never met with one such instance; and the patient has always been restored to perfect and lasting health *."

Mr Sharpe has here communicated a very interesting fact; the more valuable, by coming from a man of high reputation, and whose practice was very extensive. By many, however, the truth of his assertion has been doubted, from its being universally

* V. Critical Inquiry, &c. by Samuel Sharpe.—Fourth Edition, sect. VII.

univerſally known that ſchirrous tumors frequently return in other parts of the body after being extirpated. It would indeed be ſurpriſing to find the extirpation of ſchirrous tonſils prove always ſucceſsful when the ſame operation often fails when practiſed for ſimilar affections in other parts. But the explanation I have given ſets it in a more diſtinct point of view. Theſe tumors of the amygdalæ, commonly termed Shirrous Tonſils, are not of the true ſchirrous nature; and hence it is that they never degenerate into cancer, nor return after extirpation; and this is accordingly a very weighty argument for removing them as ſoon as they become ſo large as to impede either deglutition or reſpiration. Till this, however, takes place to a conſiderable degree, no practitioner ought to adviſe this operation; for, as it is attended with a good deal of pain, it ſhould be avoided as long as the ſafety of the patient does not require it; but whenever the tumor becomes ſo large as to produce much interruption

uption to the paſſage of food and air, ve ſhould not heſitate to adviſe it.

Different methods have been propoſed or removing enlarged tonſils. — Some ave adviſed the repeated application of ne actual or potential cautery: Others ecommend exciſion with the ſcalpel or ith crooked ſciſſars: And, laſtly, it has een propoſed to do the operation with gatures.

Cauſtic applications, however, ſhould ere be conſidered as inapplicable, from ne impoſſibility of uſing them without njury to the neighbouring parts; and e are debarred from the uſe of the knife nd ſciſſars by the profuſe hemorrhagies nat ſometimes occur from exciſion. Neeſſity therefore obliges us to employ the gature; and with due attention, almoſt very tumor may be removed by means f it to which the amygdalæ are liable.

In the preceding ſection I have given detail of the beſt method of applying gatures to polypous excreſcences in the roat, and it likewiſe appears to be the

eaſieſt and beſt method of forming ligatures upon tumors of the amygdalæ. It ought to be done with pliable ſilver-wire, but catgut of a proper ſtrength will likewiſe anſwer; and although the double canula to be paſſed through the noſe might be of a ſtraight form, it will anſwer better if ſomewhat crooked, as in fig. 2. Plate XXXI.

The double of a ligature, formed of pliable ſilver-wire or catgut, being inſerted into one of the noſtrils, muſt be puſhed back till it reaches the throat, when the operator, introducing his fingers at the mouth, muſt open the ligature; and having paſſed it over the tumor, it muſt now be preſſed cloſely down to the root of it. In this ſituation, he muſt continue to preſerve it with his fingers; while an aſſiſtant having inſerted the two ends of the ligature into the canula, muſt puſh it eaſily along the noſtril, till the farther end of it is either ſeen or felt in the throat; and the wire being now pulled ſo tight as to fix it in the ſubſtance of the tumor,

tumor, the ends of it hanging out at the other end of the canula must be tied in the manner pointed out in the last section, to the wings or handle of the instrument; and the ligature being made tighter from time to time, the swelling will soon fall off.

The more pendulous the tumor, the more easily will the ligature be fixed. But however broad the base of it may be, it may with little difficulty be done; for the swelling is always very prominent: So that when the double of the wire is fairly passed over, it may easily be pushed down to the base with the fingers; and being preserved in this situation till pulled sufficiently tight, it will not afterwards be in danger of moving.

I have advised the ligature to be first carried through the nose before being put over the tumor. It might indeed be inserted by the mouth; but in this manner more inconvenience would ensue from the ligature and canula hanging out at the mouth during the cure. This method,

however, may be adopted when any difficulty occurs in the application of the ligature in the manner I have mentioned.

For the moſt part we find both tonſils nearly equally enlarged: In ſome caſes, the removal of one of them forms a ſufficient opening for the paſſage of the food; but when it becomes neceſſary to extirpate both, it anſwers better to allow any inflammation or tenſion induced by the removal of the firſt, to ſubſide entirely before attempting to remove the other.

This mode of applying ligatures upon theſe tumors, is in my opinion the beſt; but it may often be done in a different manner. Let a ligature ſufficiently ſtrong be formed of waxed thread; and let this be carried round the tumor either with the fingers or with a ſplit probe, ſuch as is repreſented in Plate XXXIII. fig. 2. A nooſe is now to be made upon it, with which a knot of any degree of tightneſs may be formed on it by fixing one end of the thread at the ſide of the tumor in the throat, with the inſtrument, fig. 2. Plate XXXVIII.

XXXVIII. while the other is firmly drawn with the other hand of the ſurgeon out at the mouth.

This method was firſt put in practice by Mr Cheſelden; and it has ſince that period been recommended by Mr Sharpe and others. In order to fix the ligature where the tumor is of a pyramidal form with a broad baſe, a needle with an eye near the point, ſuch as is repreſented in Plate XXXVIII. fig. 3. was likewiſe propoſed by Mr Cheſelden. A double ligature being put into the eye of the needle, the inſtrument is to be puſhed through the centre of the tumor near to its baſe, and the threads being diſengaged with a pair of forceps, the needle is withdrawn. In this manner two ligatures are to be formed, each of them being made to comprehend one half of the tumor by one of the threads being tied above, and the other below.—The inſtrument, fig. 2. of the ſame Plate, is likewiſe neceſſary here.

Although it is proper to mention this method of fixing ligatures upon tumors

of the tonſils with broad baſes, it will not probably be often employed. The double canula renders it unneceſſary, as by means of it ſuch a degree of force can be applied as will at once fix the ligature in the ſubſtance of the ſwelling: Even when the operation was done in a manner that did not admit of the ligature being ſo firmly fixed as may be done with the double canula, Mr Sharpe was of opinion, that Mr Cheſelden's method of performing the operation was unneceſſary. His obſervation on this point is, "That he had never in one inſtance found it neceſſary "to employ the double ligature recommended by Mr Cheſelden *."

By whatever method, however, the operation is performed, it may in ſome inſtances happen that the tumor does not fall off by the firſt ligature; in which caſe another muſt be applied, and continued till the cure is completed.

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* Vide Mr Sharpe's Treatiſe on the Operations of Surgery, Chap. xxxii.

SECTION VII.

Of the Extirpation of the Uvula.

THE Uvula, by frequent attacks of inflammation, as likewise perhaps by other causes, becomes in many instances so relaxed and elongated as to be productive of much distress, not only by impeding deglutition, but by irritating the throat so as to induce cough, retching, and even vomiting.

Any slight degree of enlargement of this part may in general be removed by the frequent use of astringent gargles, composed of strong infusions of red rose leaves—Peruvian bark—or oak-bark, with a due proportion of alum or vitriolic acid; and as long as remedies of this kind prove effectual, no others should be advised. But when these fail, and when the tumefaction of the uvula is so considerable as to create much distress, we de-

pend on extirpation alone for removing them.

The uvula may be extirpated either with a ligature or by exciſion. By the laſt, the parts affected are quickly removed, and the patient obtains immediate relief; whereas the other is not only ſlow in its operation, but it is applied with difficulty. But by exciſion, troubleſome hemorrhagies ſometimes occur, while no riſk whatever enſues from ligatures. Some practitioners indeed allege that no danger can enſue from any hemorrhagy that takes place from the removal of the uvula by exciſion; but although this may frequently happen, yet I know from experience that inſtances of the contrary ſometimes occur, and that large quantities of blood have been loſt by this operation. This will moſt readily happen where the uvula is much enlarged, and where of conſequence the veſſels with which it is ſupplied are in an enlarged ſtate. Where the uvula is merely elongated, there will ſeldom, I imagine, be

be much riſk in removing it by exciſion. In this ſtate, therefore, of the diſeaſe, exciſion ſhould be preferred; but when the parts to be removed are much increaſed in bulk, it anſwers better to do it with ligatures.

Different inſtruments have been invented for cutting off the uvula. One of theſe that has been moſt frequently uſed, is repreſented in Plate XXXIX. fig. 1. But neithis nor any other of a ſimilar form anſwers the purpoſe ſo well as a curved probe-pointed biſtoury, ſuch as is delineated in fig. 3. of the ſame Plate. Or the operation may be very eaſily done with ſciſſars of the common form, or with a curve, ſuch as is repreſented in Plate XXXVI. fig. 2.

When any of theſe inſtruments are employed, the mouth being firſt ſecured with a ſpeculum, ſuch as is repreſented in Plate XLI. fig. 1. the uvula ſhould be laid hold of with a pair of ſmall forceps, or with a ſharp hook, by which it will be more eaſily cut off than if left looſe

looſe in its natural pendulous ſtate. After the operation, if much blood is diſcharged, it may be reſtrained by the uſe of an aſtringent gargle; by the application of ardent ſpirits; or even by touching the bleeding veſſel with lunar cauſtic. It will ſeldom happen, however, that any precaution of this kind is neceſſary; for a moderate flow of blood will never do harm, and more than this will rarely occur where the parts are not much enlarged. When, again, a ligature is to be employed, the mode of fixing it deſcribed in the laſt ſection may be adopted: It may be done by the double canula paſſed through one of the noſtrils;—or the canula may be introduced at the mouth;—or it may be done by the method employed by Mr Cheſelden for applying ligatures upon the tonſils, alſo deſcribed in the laſt ſection. After paſſing the ligature round the tumor, which in general will be eaſieſt done with the fingers, a knot may be tied upon it in the manner I

have there directed, with the instrument, fig. 2. Plate XXXVIII.

I have likewise thought it right to represent another instrument, hitherto almost the only one employed for fixing a ligature upon the uvula, Plate XXXI. fig. 3. From the name of the inventor, it has commonly been termed the Ring of Hildanus. The invention is very ingenious; and by means of it a ligature may be firmly applied upon the uvula: But the same intention may be accomplished in a more simple manner by either of the other methods described above; so that this will probably be laid aside.

SEC-

SECTION VIII.

Of Scarifying and Fomenting the Throat.

IT frequently happens in inflammation of the amygdalæ and contiguous parts, that ſcarifications become neceſſary; in the firſt place, for leſſening the degree of inflammation by inducing a topical diſcharge of blood; and afterwards for the diſcharge of matter contained in abſceſſes, when ſuppuration has not been prevented by the means uſually employed for this purpoſe.

In Plate XL. figures 1. and 3. I have delineated different forms of inſtruments for this purpoſe: The wings with which fig. 1. is furniſhed are particularly well adapted for compreſſing the tongue, while the ſcarificator is employed in the back part of the mouth. With either of theſe, ſcarifications may be made, or abſceſſes opened, in any part of the mouth or throat with entire ſafety.

In

In the treatment of inflammatory affections of these parts, we often find it necessary to recommend fomentations; a remedy, too, which proves frequently highly useful in catarrhal affections of the trachea and lungs. Various methods are proposed for conveying steams to these parts; but the best I have ever seen, and it is likewise the neatest and most simple in its construction, is the instrument delineated in Plate XL. fig. 2. the invention of Mr Mudge of Plymouth. By means of it, the throat, trachea, and lungs, may be very effectually fomented by drawing warm steams into them, and without any difficulty or inconvenience to the patient, who may lie in bed during the whole operation.—This instrument I consider as so highly useful in the treatment of every case of catarrh, that I think every family should have it.

CHAP.

CHAPTER XIII.

Of DISEASES *of the Lips.*

SECTION I.

Of the HARE-LIP.

NATURAL deficiencies are not ſo frequent in any part of the body as in the lips. Children are often born with fiſſures in one of the lips, particularly in the upper lip. In ſome inſtances this is attended with a conſiderable want or real deficiency

eficiency of parts; in others we only neet with a ſimple fiſſure or diviſion; whilſt in ſome again, there is a double iſſure with an intermediate ſpace left between them. Every degree of this affection is termed a Hare-lip, from a reſemblance that it is ſuppoſed to bear to the lip of a hare.

For the moſt part this fiſſure or opening is confined to the lip itſelf: But it often extends backward along the whole courſe of the palate, through the velum pendulum and uvula into the throat; and in ſome inſtances the bones of the palate are either altogether or in part wanting, while in others they are only divided or ſeparated from each other.

Every degree of the hare-lip gives much deformity, and it ſometimes prevents a child from ſucking. When in the under lip, which is not, however, often met with, it commonly prevents the ſaliva from being retained; it is always productive of ſome degree of impediment of ſpeech; and when the diviſion extends along

along the bones of the palate, the patient is much incommoded both in chewing and ſwallowing, by the food paſſing readily up to the noſe.

Theſe are all very urgent reaſons for an early removal of the hare-lip being attempted: Where it interrupts, indeed, the ſuckling of the child, the operation muſt either be done immediately, or the child muſt be fed with a ſpoon; but by practitioners in general we are deſired at all events to delay the operation to the third, fourth, or fifth year; leſt the crying of the child ſhould render the means employed for obtaining a cure altogether abortive.

This reaſon, however, does not appear to be of importance; for till a child arrives at his twelfth or fourteenth year, when we may ſuppoſe him to be poſſeſſed of ſufficient fortitude for ſubmitting eaſily to the operation, the ſame objection holds equally ſtrong: Nay, a child of ſix or eight years of age is in every reſpect more difficult to manage than one of ſix,

eight, or twelve months. I am there-
fore clearly of opinion, that in a healthy
child the operation ſhould never be long
delayed; for the more early it is per-
formed, the ſooner will all the inconve-
niencies produced by the diſeaſe be ob-
viated; and ſo far as I can judge from
experience, I think that it may be done
even in very early periods of infancy,
perhaps in the third or fourth month,
with the ſame proſpect of ſucceſs as in
any period of life. I have done it in the
third month with very complete ſucceſs,
but the twelfth or thirteen anſwers bet-
ter.

Practitioners all agree in regard to the
intention of this operation, which is ac-
compliſhed by cutting off the ſides of the
fiſſure ſo as to reduce the whole of it to
the ſtate of a recent wound; and this be-
ing done, the edges of the divided parts
are drawn together and retained in con-
tact till they adhere firmly. But al-
though the principles on which our prac-
tice is founded are univerſally admitted,

authors have entertained very oppoſite opinions of the beſt method of carrying it into effect. By ſome we are directed to employ the interrupted ſuture for retaining the ſides of the fiſſure: Others prefer the twiſted ſuture: Whilſt by many, ſutures of every kind are ſaid to be improper; and that a cure may be always obtained with adheſive plaſters, or bandages; by which means a great deal of pain, would no doubt be avoided, which ſutures are always ſure to excite.

This is a point of much importance, and therefore merits particular diſcuſſion; and more eſpecially as it has been warmly conteſted even by ſurgeons of reputation.

In the treatment of all diſeaſes, our principal object is to obtain an effectual cure; but every practitioner will allow, that the eaſieſt mode of effecting this ſhould always be preferred. On this principle much pains have been taken to ſhow, that ſutures are ſeldom neceſſary

n wounds of any kind, eſpecially in the reatment of the hare-lip; and in ſupport f this opinion various caſes are recited f cures being effected with bandages a-one: Nay, ſome have gone ſo far as to ſſert, that in every inſtance of hare-lip cure may be accompliſhed with more ertainty by a proper bandage alone than when ſutures are employed; for they al-ege, that the irritation produced by ſu-ures ſerves in a great meaſure to coun-eract the very purpoſe for which they re employed. After the edges of the iſſure are cut off or rendered raw, the ontraction of the adjoining muſcles is he only difficulty that we have to en-ounter: And this, we are told, inſtead f being removed by ſutures, is always ncreaſed by them; while the ſame in-ention, it is ſaid, may be accompliſhed with no inconvenience whatever, by a andage applied in ſuch a manner as to keep the edges of the ſore in cloſe con-act, which it does by ſupporting the con-iguous parts ſo as to prevent the reac-

tion of the muſcles with which they are connected.

That a hare-lip may be completely cured with the uniting bandage, or even with adheſive plaſters alone, there is no reaſon to doubt; and being attended with leſs pain than the method of cure by ſutures, it ought in every caſe to be preferred, if with equal certainty it could be relied on: But although with much pain and attention, we might in ſome inſtances be able to accompliſh a cure, with plaſters and bandages; yet, from the nature of the remedy, there is cauſe to imagine that it would frequently fail; for in the cure of the hare-lip, if every point of the parts meant to be united be not kept in contact till complete adheſion takes place, our intention is always fruſtrated, and nothing afterwards proves ſucceſsful but a repetition of the operation in all its parts. The edges of the ſore muſt be again rendered raw, and the patient muſt ſubmit either to another application of the bandage, or to the uſe of ſutures; which, if employed

d at firſt, might have ſaved much trouble oth to himſelf and the operator: For is proper to obſerve, that in caſes where ne operation is applicable, the method of ure by ſutures, when rightly conducted, ever fails, at leaſt I have never known n inſtance of it. It ſometimes happens, ndeed, that the deficiency of parts is ſo reat as to render it impoſſible by any eans to keep them in contact; and if ſu-ures are employed in caſes of this kind, ney muſt no doubt prove unſucceſsful: 'his, however, is not the fault of the emedy, but of the operator, in uſing it n an incurable variety of the diſeaſe.

As I have had often occaſion to practiſe is operation, and being at firſt prepoſ-ſſed in favour of the method of cure y bandages and plaſters, I gave them oth a fair trial; and the reſult was ex-ctly what I have mentioned. I found, at by a proper application of bandages nd plaſters, a complete cure might in me inſtances be obtained, but that the reateſt care and attention could not in-

ſure ſucceſs; and finding that diſappointments never occur from the uſe of ſuſtures when properly employed, I have now laid every other method aſide; and hitherto I have had no cauſe to regret my having done ſo. I ſhall therefore proceed to deſcribe the operation as it ought to be performed with ſutures; and as none of the methods by bandages or ſutures, will ever probably be received into general uſe, it would be conſidered as ſuperfluous to give an account of them: And beſides, our doing ſo here is unneceſſary, as the ſubject has already been fully treated of by various authors of reputation, particularly by Monſieur Louis of Paris, who has given a paper in the 4th Volume of the Memoirs of the Royal Academy of Surgery, that contains every argument that has been ſuggeſted in favour of this method of curing the hare-lip with bandages.

In proceeding to the operation, the patient, if an adult, ſhould be ſeated oppoſite to the light with his head properly ſupported by an aſſiſtant; but if a child he

e will be more firmly ſecured if laid up-
n a table, and kept in a proper poſture
y an aſſiſtant on each ſide.

The operator is now to make an atten-
we examination, not only of the parts to
e removed, but of thoſe with which they
re connected. The upper lip ſhould be
ompletely ſeparated from the gums be-
eath, by dividing the frenum that con-
ins them. This admits of the lip being
ore equally ſtretched; and when one of
ne fore-teeth is found oppoſite to and
rojects into the fiſſure, as is often the
ſe, it ought to be taken out, as it will
ritate and ſtretch the parts if allowed
remain. In ſome inſtances too, eſpe-
ally when the fiſſure runs through the
nes of the palate, a ſmall portion or
rner of bone is found to project from
ne or both of the angles. This ſhould
kewiſe be removed; and it may be eaſily
ne with pliers or forceps, which ſhould
e both firm and ſharp, as is repreſented
. Plate XLIII. fig. 2.

Theſe preparatory ſteps being adjuſted, the ſurgeon, ſtanding on one ſide of the patient, muſt take one ſide of the lip between the thumb and fore-finger of his left hand; and deſiring an aſſiſtant to do the ſame with the oppoſite ſide, and to ſtretch it ſomewhat tightly, he ſhould with a common ſcalpel, make an inciſion from the under border of the lip up to the ſuperior part of it; in which he muſt take care to include not only all the parts immediately concerned in the fiſſure, but even a ſmall portion of the contiguous ſound ſkin and parts beneath: And this being done on one ſide, a ſimilar inciſion muſt be made on the oppoſite ſide; which ought to be of the ſame length with the other, terminating in the ſame point in the upper part of the lip. By this means, if the operation is rightly done, a piece, including the fiſſure completely, will be cut out, of the form of the letter V inverted; and the deficiency will in every part of it have the appearance of a recent wound.

With

With a view to prevent inflammation, the divided arteries ſhould be allowed to diſcharge freely, eſpecially if the patient is plethoric; and this being done, the ſurgeon ſhould proceed to unite the ſides of the fiſſure. In this he will be much aſſiſted by deſiring the cheeks to be puſhed forward ſo as to bring the edges of the wound nearly into contact, although not altogether ſo cloſe as to prevent him from ſeeing freely through from one ſide of it to the other; the aſſiſtant behind being directed to ſupport the parts in this ſituation during the remaining ſteps of the operation.

The ſurgeon is now to ſee that the two ſides of the cut correſpond exactly with each other; and this being done, the pins intended to ſupport them muſt be introduced in the manner I have directed in deſcribing the twiſted ſuture, Chap. V. Sect. V. The firſt pin ſhould be near to the under edge of the lip: If poſſible, indeed, it ſhould be placed entirely within the red part of the lip, leaving no more

ſpace

ſpace beneath than is merely neceſſary to ſupport it. In adults, another pin ſhould be inſerted in the centre of the cut, and a third within a very little of the ſuperior angle. By ſome we are adviſed to uſe a greater number of pins; but even in adults three are always ſufficient, and in infants two will very commonly anſwer. In paſſing them, they ſhould be made to enter nearly half an inch from the edge of the ſore; and being carried nearly to the bottom, which will be ſeen by retaining the wound open in the manner I have directed, they muſt be again paſſed outward, in a ſimilar direction and to an equal diſtance on the oppoſite ſide of the fiſſure.

The aſſiſtant ſhould now puſh forward the cheeks, ſo as to bring the edges of the ſore cloſe together, when a firm waxed ligature ſhould be applied over the pins in the manner I have formerly directed for the twiſted ſuture, and as will perhaps be better underſtood by fig. 3. Plate XLIV. The

urgeon ſhould firſt apply the ligature to
ne under pin; and having made three or
our turns with it, ſo as to deſcribe the
igure of 8, it ſhould then be carried to
he contiguous pin; and being in a ſimi-
ar manner carried round this pin, he is
hen to finiſh the operation by carrying
t to the other; taking care in the whole
ourſe of applying it, to draw it of ſuch
tightneſs as may retain the parts in
ontact; but not ſo ſtrait as to irritate or
nflame them, as is too frequently done.

By ſome we are deſired to uſe a ſepa-
rate thread for every pin, in order, as
they ſay, to admit of one pin being re-
moved, if it ſhould become neceſſary,
without diſturbing the others. This, how-
ever, I have never found to be the caſe;
ſo that the precaution is unneceſſary,
while it prevents us from deriving any
advantage from paſſing the ligature dia-
gonally from one pin to the another, by
which we have it in our power more ef-
fectually to prevent the ſides of the fiſ-
ſure between the pins from riſing into un-

equal

equal heights than otherwiſe could poſſibly be done.

A piece of lint covered with mucilage to retain it, ſhould now be put over the courſe of the cut, with a view to protect it more effectually from the air; and it ſhould likewiſe be made to cover the ends of the pins, to prevent them from being entangled with the bed-clothes, or otherwiſe; and this is all the dreſſing or bandage that in general is required. We are deſired indeed by many, after the pins are all ſecured, to apply the uniting bandage, in order to ſupport the muſcles of the cheek, ſo as to prevent the pins from cutting or irritating the parts through which they paſs, which they are apt in ſome degree to do, when the deficiency of parts is conſiderable.

This however is a practice that I have never obſerved prove uſeful, and it often does harm; for a bandage cannot be applied with ſuch tightneſs as to give any ſupport to the muſcles of the cheek without exciting much pain and inconvenience:

onvenience: And it is apt to do harm, as have elſewhere obſerved, by preſſing upn the ends of the pins over which it muſt paſs; for even although a ſlit is made in that part of the bandage correponding to the lip, as ſome have adviſed, reſſure upon the pins can ſcarcely be revented: And beſides, although a banage may be applied ſufficiently tight at irſt, the motion of the jaw commonly ooſens it ſoon, ſo as to prevent it from aving any farther effect. When, howver, the deficiency of parts is great, and vhen the edges of the ſore are with diffiulty brought together, ſome advantage nay be derived from a proper applicaion of adheſive plaſters. An oblong iece of leather, ſpread either with comnon glue, or with ſtrong mucilage, ſuch s is employed in making court-plaſter, eing applied over each cheek, and of a ize ſufficient for reaching from the angle of the jaw, to within an inch or thereby of the pins on each ſide, and each piece of eather having three firm ligatures fixed

to

to that end of it next the pins, one at each corner and another in the middle. The cheeks ſhould now be ſupported by an aſſiſtant, when the ligatures ſhould be tied ſo as to retain the parts in this ſituation; and if care is taken to make the ligatures paſs between the pins, and not immediately over them, no harm or inconvenience will be done them. It rarely happens however, that this kind of aſſiſtance is needed; for I have, in almoſt every inſtance, found that the pins alone anſwer the purpoſe.

It is ſcarcely neceſſary to obſerve, that while the pins are in the lip, the patient ſhould be fed upon ſpoon meat, and ſhould be prevented from laughing, crying, and ſtretching his mouth in any manner or way.

The pins having remained in the lip for five or ſix days at fartheſt, they ſhould then be taken out; for by this time, as I have found by experience, the parts are firmly united; and by remaining longer, they are apt to leave marks which do not

ſo

readily diſappear as when they are removed ſooner. I have reaſon indeed to think that three days would frequently prove ſufficient; but as I know from experience that the pins may, without detriment, be allowed to remain for five or ſix days, I think it better not to remove them ſooner.

This is the practice that I would adviſe for a common caſe of hare-lip; and, as a farther illuſtration of it, ſome figures are delineated in Plate XLIV. repreſenting the appearance of the diſeaſe before the operation—the parts which ought to be removed—the application of the pins—and the appearance which the parts ſhould have when the operation is finiſhed. But for a more particular account of theſe, I muſt refer to the explanation of the Plate.

What I have hitherto ſaid relates to the diſeaſe in its moſt ordinary form. In the caſe of a double hare-lip, the operation requires to be performed twice in all its parts; firſt in one fiſſure, and then in the

the other. By ſome we are directed t
do them both at the ſame time: But thi
ſhould never be attempted; for by doing
ſo, we incur the riſk of loſing all the ad
vantages to be derived from the interme
diate ſound parts, and of which I onc
met with a very diſagreeable inſtance
The ſound part of the lip lying betwee
the two fiſſures, was by no means incon
ſiderable, but being much ſtretched wit
a great number of pins paſſed through it
it began to inflame immediately after th
operation; and the inflammation and pai
increaſing, the whole pins were obliged
to be removed, and the patient would no
afterwards ſubmit to any farther trial
We ought, therefore, firſt to complet
the cure of one fiſſure; and this bein
done, we may in the ſpace of two o
three weeks venture with much ſafety o
the other.

In deſcribing this operation, I have de
ſired, that although the fiſſure may not ex
tend the whole breadth of the lip, ye
that the cut ſhould paſs up to the uppe
par

rt of it: And any perſon accuſtomed this operation will know that the parts ay be united much more neatly in this anner, than when the lip is only cut rough part of its breadth. By one me-od of treatment, the parts, when drawn gether, are ſmooth and equal; but by e other, they are apt to be uneven, and uch puckered.

I have alſo deſired that the ſurgeon ould take particular care to make the o ſides of the cut exactly of an equal ngth. A point of much importance in is operation, and requiring more atten-on than it commonly meets with: For it obvious, if one ſide of the wound is long-than the other, that the cicatrix will t be ſmooth and even, as it ought to be: y inſerting the firſt pin at the edge of e lip, this part of it will indeed be ve-properly united, but the reſt of it muſt uneven. The moſt effectual preventa-ve of this, is to mark with ſmall dots of k, not only the length of the cut on ch ſide, but the direction that it ought

to take, by which every chance of going wrong is prevented.

It is of much importance to have the lip equally and tightly ſtretched in making the inciſion, otherwiſe the edges of the ſore will be ragged and uneven: This may be always prevented by proper attention; but with a view to guard againſt it as much as poſſible, curved forceps may be employed for laying hold of the lip. Different forms of theſe are delineated in Plate XLII. fig. 2. and 3. They ſhould be made ſo as to compreſs the lip equally; and being applied in the direction intended for the inciſion, the ſcalpel is carried along the ſide of them, by which méans the cut may be made very exact and even. Other forms of this inſtrument have been recommended; but thoſe that I have delineated are more ſimple, and anſwer the purpoſe better than any that I have met with.

By ſome we are deſired not to employ any inſtrument of this kind, under an apprehenſion of its irritating and bruiſing the

the lip. This ſuſpicion, however, can have occurred only to thoſe who have never uſed it; for when the blades are ſmooth and equal, a degree of compreſſion may be made with it perfectly ſufficient for fixing the lip without giving any degree of uneaſineſs to the patient. This I can aſſert from much experience of its utility.

Inſtead of making the inciſion in this manner, ſome have directed it to be done by fitting a piece of paſteboard, lead, or tin, to the gums beneath; and the lip being placed upon it, it is divided by cutting down upon it with a ſcalpel into the ſupporting ſubſtance: The operation may no doubt be done in this manner, but the cut is more eaſily made in the manner I have adviſed.

Till of late the inciſion in this operation was commonly made with ſciſſars; and although they are now very generally laid aſide on the ſuppoſition of their bruiſing the lip, yet I know that the operation may be very properly done with

them. Sciſſars ſhould not be employed to cut a part of much thickneſs, but the lip is ſeldom ſo thick as to render it improper to uſe them in the operation for the hare-lip. They have of late been uſed in this place by different practitioners; and as the point can be determined by experience alone, I have likewiſe employed them. In order to aſcertain which of the two modes of operating, that with the ſcalpel or ſciſſars, ſhould be preferred, I have in different caſes made the inciſion on one ſide with a ſcalpel, and on the other with ſciſſars. The patients commonly ſay that the ſciſſars give leaſt pain, probably from their making the cut in leſs time than can be done with the knife; and, during the cure, that ſide of the lip on which the cut is made with ſciſſars, neither ſwells nor inflames more than the other. I do not from this, however, mean to ſay, that ſciſſars are preferable to the ſcalpel; I mention it only to ſhow that the common idea entertained of them is ill-founded, and that the operation

ration may be equally well done with both inſtruments. Sciſſars for this purpoſe ſhould be very ſtrong, and particularly firm at the joint. They ſhould alſo be highly poliſhed. The ſize and form of them repreſented in Plate XLIII. fig. 1. has been frequently uſed, and is found to anſwer.

When deſcribing the Twiſted Suture in Chapter VI. I gave the preference to gold pins; and I am ſtill of opinion that they are the beſt. When of a proper form, ſuch as are repreſented in Plate IV. figs. 2. 3. and 4. they pierce the lip with much eaſe, without any aſſiſtance from a porte-aiguille: But they who think that a ſharper and firmer point than can be given to gold will anſwer better, may have ſteel-points added, as is repreſented in figures 6, 7, and 8. of the ſame Plate; and the ſteel-points being moveable, they may be removed after the pins are paſſed, by which every riſk is prevented of their wounding the contiguous parts. By ſome practitioners, flexible needles are employed for this operation; but they do not anſwer ſo well

as thoſe that are firm and give ſufficient reſiſtance to the ligatures.

In paſſing the needles, I have ſaid that they ſhould go nearly through to the oppoſite ſide of the lip: This merits particular attention, otherwiſe a fiſſure is apt to remain in the inner part of the lip, from which a good deal of trouble may be afterwards experienced. And beſides, although the diſcharge of blood that ſucceeds to this operation is always ſtopt immediately on the parts being drawn together by the ligatures if the pins have been properly introduced, yet when not paſſed to a ſufficient depth, the blood will continue to get out behind, and may afterwards be productive of much diſtreſs. I have ſeen an inſtance of this where a very troubleſome ooſing of blood continued for ſeveral days after the operation; and an inſtance is recorded even of death having enſued from it. In order to prevent the lip from being ſtretched by the patient in ſpitting, it is the uſual practice to deſire him to ſwallow his ſaliva with the

the blood that may be diſcharged from the ſore. In this caſe the patient complied implicitly with the directions given him; and he died from the cauſe I have mentioned, namely, a great loſs of blood. His ſtomach and bowels were found filled with blood that he had ſwallowed *.

I have thus deſcribed all the ſteps of the operation for the hare-lip; and it is proper to obſerve, that they are equally applicable in the treatment of a fiſſure in the lip by whatever cauſe it may be formed; only, in a recent cut, as the edges of it are already raw, all that the ſurgeon has to do is to inſert the pins and apply the ligatures. In wounds where ſuppuration has already commenced, there is uſually ſome degree of inflammation upon their edges. While this continues it would be improper to draw them together by ligatures; but as ſoon as the inflammation ſubſides, we may with propriety

* Vide Memoires de l'Academie Royale de Chirurgie, Tom. IV. p. 427.

ty and ſafety inſert the pins and finiſh the operation in the manner I have directed. We are told indeed by many, that this practice will ſucceed only in recent wounds, and that it ſhould not be recommended where matter is already formed: I have often, however, acted otherwiſe: And I have uniformly found, where the edges of a ſore have not become callous, that they have been united as eaſily when covered with pus as when perfectly recent and covered with blood.

In hare-lip accompanied with a fiſſure in the bones of the palate, after uniting the ſoft parts in the manner I have pointed out, ſome advantage may be derived from a thin plate of gold or ſilver exactly fitted to the arch of the palate, being fixed by a piece of ſponge ſtitched to the convex ſide of it, and inſerted into the fiſſure. If the ſponge is properly fitted and inſerted dry, the moiſture which it imbibes from the contiguous parts will for the moſt part make it remain ſufficiently firm, by which both ſpeech and deglutition

deglutition will be rendered more eaſy. In ſome caſes, however, the form of the fiſſure is ſuch as to prevent the ſponge from having any effect. This always happens when the opening is wideſt outwardly. For ſuch caſes other means have been propoſed, eſpecially thin plates with gold ſprings, made ſo as to fix upon the contiguous parts; but no invention of this kind has been yet found to ſucceed.

SEC-

SECTION II.

Of the Extirpation of Cancerous Lips.

THE under lip is more frequently attacked with cancer than any other part of the body; and as we know of no internal remedy by which the diſeaſe can be cured, the only means we employ for it is the removal of the diſeaſed parts. When treating of cancerous ulcers, in the fifth Chapter of this work, I endeavoured to ſhow, that little dependence can be placed on arſenic or any other of the cauſtic applications, that have been ſo much recommended for this purpoſe; and that we are to truſt to the ſcalpel alone for relief.

When a cancerous ſore has ſpread over any conſiderable part of the lip, and eſpecially when the lip is altogether diſeaſed, all that a ſurgeon can do is to remove the diſeaſed parts; to ſecure the divided arteries with ligatures, when this is found

ceſſary; and to dreſs the ſore as a re-
nt wound. In this manner a cancer
ay be effectually taken away; but it
ves a very diſagreeable appearance, the
der teeth and gums being left all un-
vered; while the patient can neither
tain his ſaliva, nor ſwallow liquids ea-
y. There is here, however, no alter-
tive; for where the whole lip is taken
way, theſe inconveniencies muſt neceſ-
rily enſue, as there is no poſſibility of
awing the divided parts together.

But when the diſeaſe has not attacked
y conſiderable part of the lip, we may
ways have it in our power to draw the
lges of the cut together ſo as to make
em unite with the twiſted ſuture in the
anner deſcribed in the laſt ſection: By
hich we not only prevent deformity,
ut the patient is equally capable as be-
re the operation, of ſwallowing liquids
nd retaining his ſaliva: And beſides,
is method of treatment, as I have elſe-
here remarked, by leaving a ſmall ex-
nt of cicatrix, ſeems to have ſome ef-

fect

fect in preventing a return of the diſeaſe; at leaſt this has been evidently the caſe with thoſe that have fallen under my obſervation. Where the operation has been performed in the uſual way, without drawing the divided parts together and uniting them with ligatures, the diſeaſe has in ſeveral inſtances returned: But, excepting in a very few unfavourable caſes, it has never returned where the hare-lip method of treatment has been employed. Nay more, this will ſometimes ſucceed where the other has failed. A man appeared at our Infirmary here with a cancer on the under lip. It had been twice removed by extirpation in the uſual way; but the diſeaſe returned after each operation almoſt as ſoon as the ſore was healed: The lip being ſtill ſufficiently full, the hare-lip method of treatment was accordly put in practice. The cure was completed; and I had an opportunity of knowing, eight years after the operation, that the man remained in good health, without any return of his diſeaſe. Nor ſhould

e be deterred from doing the operation this manner by the diſeaſe being ex-nſive, if we find that the parts that have een divided can be drawn together and tained by the twiſted ſuture: And this, may remark, may be always done where e diſeaſe does not render it neceſſary to move almoſt the whole lip. The parts, rming the lip, ſtretch ſo conſiderably, at in general this method of treatment ay be adopted, although only a third rt of the lip may remain.

With reſpect to the method of doing e operation, I muſt refer to the laſt ction. In addition to which, I have to ſerve, that all the cancerous parts ought the firſt place to be removed, taking re to form the cut in ſuch a manner as ill moſt readily admit of the divided rts being eaſily and neatly drawn to-ether. When the diſeaſe is ſeated in e lip only, the parts will have nearly e ſame appearance after this operation, they have after that for the hare-lip. ut when the cancer extends to the cheek, is ſometimes the caſe, a longitudinal

diviſion

diviſion of the lip will not only be needed, but a tranſverſe cut into the cheek; both to be united by pins and ligatures: An operation which, in different inſtances, I have put in practice with very complete ſucceſs.

CHAP.

CHAPTER XIV.

Of the DISEASES *of the* MOUTH.

SECTION I.

Anatomical Remarks.

BEFORE proceeding to conſider the diſeaſes that are the object of the pre:nt chapter, it may be proper to premiſe ſhort anatomical deſcription of the teeth, ums, and jaws, the parts in which theſe iſeaſes are chiefly ſeated.

On

On examining a tooth, we find it divided into three parts;—that part of it which lies above the gums, termed the Body or Corona of the tooth;—the roots or fangs, which the gums, in a ſtate of health, cover entirely;—and a kind of depreſſion between the body and fangs, juſt where the gums commonly terminate: This is termed the Neck of the Tooth.

The root, as well as the interior part of the corona, is compoſed of an oſſeous matter; but it appears to differ from bone by our not being able to throw injections into it: For although we are told that this may be done, there is much reaſon to imagine that the opinion is ill-founded, from the beſt anatomiſts having failed in it *.

This oſſeous part of the teeth being of a ſoft texture, would ſoon ſuffer and wear away by maſtication: But nature has amply

* Vide the Natural Hiſtory of the Human Teeth, by John Hunter, 2d edition, p. 36, &c.

y provided againſt this inconvenience; r we find all that part of them lying ove the gums, covered with a firm, hard bſtance, termed the Enamel. This part a tooth, beſides being much harder an bone, differs from bone in our not ing able to paſs the moſt ſubtle injection to it; nor can it be tinged by feeding animal upon madder, or any other co-uring ſubſtance, as is the caſe with eve-bone in the body. The enamel is thick-on the upper ſurface of the teeth, eſ-cially in the grinders, where it is moſt eded; and it becomes gradually thinner it approaches the neck, where it ter-nates. At this part we firſt find the rioſteum, which beſides covering all the ots of the teeth, is intimately connect-with them, as well as with the ſur-unding ſockets.

In the interior part of every tooth we cover a hollow, or cavity, correſpond-to the ſize and figure of the tooth it-. It commences by a ſmall opening the extremity of the root or fang, at

which the blood-veſſels and nerves of the tooth enter; and this canal becoming wider as it proceeds forwards, terminates at laſt in the body of the tooth, where the cavity is filled with a pulpy kind of ſubſtance, probably formed by an expanſion of the blood-veſſels and nerves that belong to it. A tooth with one root or fang has commonly only one hole or opening; but ſome teeth have ſeveral fangs, and every fang not only has a canal paſſing through it, but is ſupplied with diſtinct blood-veſſels, and probably with ſeparate branches of nerves, although theſe have never been clearly traced into them.

The teeth are fixed in what is termed the Alveolar Proceſs of each jaw. This conſiſts of a broad thick edge, with which the jaws are furniſhed, divided into ſeparate cells or openings for the fangs of the teeth; and the roots of the poſterior teeth being larger and more expanded than the others, we find accordingly that this part of the jaw is thicker and broader than the fore part of it. In the upper jaw this

fference, with reſpect to thickneſs, is creaſed by the antrum Highmorianum, large cavity in each maxillary bone mmediately above the large molares or inders of each ſide. This ſinus has no mmunication with the mouth, but it ens into the noſtril between the two lla ſpongioſa, by a canal, which in the eleton is large enough to admit a com- on quill. The alveolar proceſs of the per jaw is divided from this cavity by thin plate of bone, in which the roots the poſterior molares commonly ter- inate; but in ſome ſubjects they paſs rough this plate into the antrum itſelf.

The lower jaw is in infancy compoſed two bones, united at the chin by what termed the Symphyſis of the jaw. Theſe ones however are ſoon joined ſo firmly gether, that they have the appearance one continued and connected piece. eſides the alveolar proceſs, the under w is on each ſide furniſhed with other vo proceſſes, with which it is neceſſary r practitioners to be acquainted. The

anterior, which ſeems to be chiefly intended for the inſertion of the temporal muſcle, is termed the Coronoid Proceſs. It ariſes in the form of a ridge from the outſide of the jaw oppoſite to the two poſterior molares; and proceeding backward and upward, it terminates in a thin ſharp point: And the poſterior, or condyloid proceſs, which is ſhorter, thicker, and ſtronger than the other, terminates in an oblong head or condyle, by which the articulation is formed between this bone and the head.

The coronoid proceſs gives a degree of ſtrength and thickneſs to the external plate of the alveolar proceſs in this part of the jaw that does not take place in any other part of it. This renders it highly improper to attempt the extraction of the two laſt molares by turning them outwards. They ſhould always be pulled towards the inſide of the mouth. Through all the reſt of the jaw, the ſockets or alveolar proceſſes are weakeſt on the outſide, although the difference is inconſiderable;

erable; and they are in both ſides weaker in the upper than in the under jaw.

The full number of teeth in an adult is thirty-two; and being of different forms, and intended for different purpoſes, they are accordingly diſtinguiſhed by particular names. The four anterior teeth in each jaw are named Inciſores; the next to theſe on each ſide are the Canine; and the five poſterior teeth on each ſide are termed the Molares or Grinders; the two firſt the ſmall molares, and the other three the large molares or grinders.

In childhood there are only twenty or twenty-four teeth, which continue till the ſixth or ſeventh year, when they begin to drop, and are ſucceeded by others that we term the Adult or Permanent Teeth. The firſt ſet, or milk teeth as they are commonly called, as well as ſome of the others, are formed in the jaw before birth; but they do not in general appear above the gums till the child is ſeveral months old. In ſome inſtances, about the fourth or fifth month, but moſt frequent-

ly about the eighth or ninth, two of the inciſores appear in the lower jaw. Theſe are commonly ſucceeded by two in the upper jaw, and the other four fore teeth appear afterwards, at uncertain periods, between this and the tenth or twelfth month. About the ſixteenth or ſeventeenth month, four of the large molares appear; for in childhood there are no ſmall molares: One of theſe puſh out on each ſide, leaving a ſpace between them and the inciſores for the canine teeth: which being formed farther up in the jaw, ſeldom appear before the twentieth month: But about this period, or between this and the end of the ſecond year, they and other four molares commonly make their appearance.

Theſe are the periods at which the infantine ſet of teeth uſually appear; but much variety is met with in this. I have known the canine teeth appear before any of the molares. In one inſtance they came forward before two of the inciſores. In ſome caſes the inciſores have been obſerved

erved in the ſecond and third months, ay even at birth; whilſt in others, I ave known the fourteenth or fifteenth nonth paſs over before any have appeared.

Theſe teeth continue firm till the fifth or ſixth year. About this period they begin to looſen; and between the ſeventh and twelfth year they are commonly all ſhed and ſucceeded by others. By this period too, the jaws are ſomewhat lengthened, ſo as to admit of other four molares. Between the twelfth and ſixteenth years four others appear; and in general about the twentieth year the four laſt of the molares appear, uſually named the Dentes Sapientiæ.

The two ſets of teeth have very different appearances, inſomuch that we may in general know, from the appearance of a tooth, whether it belongs to the infantine or permanent ſet; and as this is often a point of importance, practitioners ought all to be able to judge of it; particularly in the treatment of thoſe diſeaſes of the

teeth that occur about the time of ſhedding the firſt ſet; for it frequently happens that we would have no heſitation in pulling a tooth, were we certain that it belonged to the firſt ſet; while we would rather allow it to remain, if it appeared to be one of thoſe that ſhould continue during life. It has happened indeed in a few inſtances, that a third ſet of teeth have appeared; but this is ſuch a rare occurrence, that it can only be conſidered as a very unuſual deviation of nature.

The ſockets of the teeth, and a ſmall portion of the teeth themſelves, are covered with a red, firm, fleſhy kind of ſubſtance, termed the gums. This ſubſtance ſeems to be almoſt entirely vaſcular; for the ſlighteſt wound or ſcratch in it is always attended with a diſcharge of blood. The alveolar proceſs of each jaw is entirely covered with it; ſo that there is a ſmall portion of gums between every two teeth. In ſome diſeaſes, particularly in the ſcurvy, a partial ſeparation of the gums from the teeth often takes place; but

but in a healthy ſtate they adhere ſo firmly to the necks of the teeth as to have ſome effect in fixing them in their ſockets.

We ſhall now proceed to treat of the diſeaſes of theſe parts, and of the operations performed upon them.

SEC-

SECTION II.

Of Dentition.

DURING the approach of the firſt ſet of teeth, and in ſome inſtances of that of the ſecond, much diſtreſs is apt to ariſe from the irritation that they excite upon the gums. For this reaſon I have thought it right, before proceeding to the diſeaſes of the mouth, to offer a few general obſervations on Dentition.

In Dentition, the gums inflame and become full about the part where the teeth are afterwards to appear. The child is conſtantly rubbing them with his fingers. The ſaliva is for the moſt part increaſed in quantity; but in a few inſtances it is otherwiſe, and the mouth becomes perfectly dry. The bowels are commonly very irregular, ſo that we ſeldom meet with

with a medium between obſtinate coſtiveneſs and ſevere degrees of purging: The heat of the body is increaſed, and quickneſs of pulſe takes place along with other ſymptoms of fever. Theſe are the moſt frequent ſymptoms of dentition; but it often happens that ſubſultus tendinum, and even convulſions ſupervene.

As theſe ſymptoms all ariſe from irritation, thoſe means are chiefly to be truſted that prove moſt effectual in counteracting this. Hence we derive much advantage from opiates, bliſters, and eſpecially from warm bathing. But when theſe fail, which they often do, we have it frequently in our power to remove every ſymptom, by making an inciſion through the gums directly upon the approaching tooth or teeth; an operation uſually termed ſcarification of the gums.

A common prejudice prevails againſt this operation, from an idea of its doing harm, in the event of a cicatrix being left upon the gums; which ſometimes happens when the tooth is not juſt at hand;

hand; for it is ſuppoſed that the cicatrix will afterwards be worſe to penetrate than if the gum had not been touched. For this reaſon the operation is ſeldom or never adviſed till the tooth is obſerved to have elevated the gum: But in this we are wrong; for when delayed ſo long, almoſt all the advantages that might be derived from it are loſt. I have commonly obſerved, that the very worſt ſymptoms of dentition take place before the teeth have come this length; and that they uſually abate on the teeth approaching towards the ſurface of the gums, probably from the gums being rendered more inſenſible by the long continued preſſure of the teeth beneath.

Whenever there is cauſe, therefore, from the nature of the ſymptoms, to ſuſpect that they are owing to this cauſe, we ſhould without heſitation make a free inciſion through that part of the gums where the tooth appears to approach; and if this inciſion ſhould afterwards heal, and if the ſymptoms ſhould again ſupervene,

ene, no riſk could occur from the ope-
ation being repeated. I have frequent-
found it neceſſary to cut two or three
mes upon the ſame tooth; but with
view to prevent the neceſſity of this,
commonly make a crucial inciſion
own to the depth of the tooth, and I
ave never found it to do harm. We
eed never be afraid of hemorrhagy.
ndeed the cut ſeldom bleeds above a
w drops, and it commonly heals ea-
ly.

The operation may be done with a
ommon lancet; or with a biſtoury or
alpel; the inſtruments uſually employ-
l for it: But it cannot be neatly done
ith any of theſe; and beſides, we are
danger, either with a lancet or ſcalpel,
hurting the contiguous parts. The
ſtrument repreſented in Plate XXXVI.
g. 4. is not liable to any of theſe objec-
ons; and being of a ſmall ſize, it may be
ntirely concealed in the palm of the hand.
he child being ſecured by the nurſe,

the

the ſurgeon with the fingers of one hand ſhould open the mouth; and conducting the edge of the inſtrument with the fore-finger of the other, the inciſions ſhould be finiſhed before it is withdrawn, care being taken to make a crucial cut over every tooth that appears to be approaching. The inciſion, as I have already adviſed, ſhould always be carried to the depth of the tooth, ſo as to lay it entirely bare; and when this is freely done, the effects that reſult from it are often remarkable. I have ſeen inſtances of children being inſtantly relieved by it, who previouſly appeared to be in the moſt imminent danger.

It ſometimes happens too, as I have already obſerved, that diſagreeable ſymptoms take place from the approach of the ſecond ſet of teeth. I have known pain produced over the whole jaw, attended with ſwelling and inflammation of the gums, cheeks, and contiguous parts, from a ſingle tooth not getting freely out. This happens

appens moſt frequently with the dentes ſapientiæ; in ſome inſtances, from the irritation that they produce upon the gums, which in the back part of the jaws are very thick; but in others from there not being room in the jaw to admit them. In the firſt caſe, we have it commonly in our power to remove all the ſymptoms, by making a free inciſion directly upon the tooth; but in the other this does not always prove ſufficient, and nothing will frequently anſwer but extraction of the tooth. When it is diſcovered that the ſymptoms ariſe from this cauſe, we ſhould not heſitate in removing the tooth: For it ſeldom happens, that any advantage is gained from delaying it, and the inflammation induced upon the gums often ſpreads to the throat and contiguous parts; and is thus productive of much diſtreſs, which might be eaſily prevented. When the throat inflames and ſwells, no other remedy will prove ſucceſsful, while the moſt violent degree of inflammation will be removed

moved in the courſe of a ſhort time, by the removal of the tooth. This I have known where the ſymptoms had obſtinately reſiſted every other means for a great length of time.

SEC-

SECTION III.

Of the Derangement of the TEETH.

THE ſecond ſet of teeth frequently appear in a very irregular manner: ſome of them will be very properly placed, while ſome are farther out, and others farther in, than they ought to be. When the derangement is not very remarkable, it ſeldom meets with much attention; but it often happens, that the deformity is ſo conſiderable, that artiſts are applied to for removing it. It happens moſt frequently with the inciſores and canine teeth, ſeldom with any of the molares.

Derangements of the teeth may take place from different cauſes:—From a deficiency of ſpace in the jaw, by which they cannot be all admitted in the ſame

line;—from a natural mal-conformation—or from ſome of the firſt ſet remaining firm after the ſecond ſet have appeared.

It will ſometimes happen, that teeth that are out of the line will fall into it without any force being applied to them, on ſpace being given them by one or more of thoſe that are in the line being pulled. When it appears, therefore, that the derangement proceeds from any of the firſt ſet not having dropped, they ought to be removed; for the longer this is delayed, there will be the leſs chance of the irregular teeth falling into their ſituation: But when it even proceeds from thoſe of the ſecond ſet being too large for the ſpace they are to fill, we ſhould not heſitate in removing ſome of them, for no other method will anſwer. When the teeth which occupy the natural circle of the jaw are regular and have a good appearance, the tooth or teeth that are out of the circle ought to be pulled; but when either of the contiguous teeth do not fill the place ſo properly as theſe would do

o, or when they are rough, or otherwiſe f a diſagreeable appearance, it is ſome-imes adviſeable to remove one of theſe hat are in the circle, while at the ſame ime we endeavour to bring the others in-o it. If this is done before the teeth ave been long fixed, and if they are not ar diſtant, they will ſometimes in a gra-ual manner, as I have already obſerved, all into the vacancy without any aſſiſt-nce; but when this does not happen oon by an effort of nature alone, we ay frequently employ means for pro-noting it. No attempt, however, of this ind can be made till the body of the de-anged tooth has paſſed freely out from he gums, as till then we cannot with aſe lay hold of it.

The uſual method of moving teeth that re out of the range, is to apply a ligature ound them, and pulling it tighter from ime to time, to fix each end of it firm-y to the contiguous teeth: Or a plate of old or ſilver is fitted to the contiguous eeth, and made to ſurround the deran-

ged teeth in ſuch a manner, that when firmly preſſed down by the oppoſite jaw, it acts with conſiderable force in bringing the teeth nearer together. This laſt method, however, proves troubleſome to the patient; and the other, at the ſame time that it in ſome degree moves the deranged teeth towards the circle, ſerves nearly in the ſame degree to draw the others out of it; but we may in a different manner apply a ligature for this purpoſe with ſafety, and it is the beſt that I have ſeen for the purpoſe. Let a thin plate of gold, of a length ſufficient to paſs over four of the contiguous teeth, be exactly fitted to the outſide of the two teeth on each ſide of the vacancy into which the deranged tooth is to be moved. The plate ſhould be perforated with ſeveral ſmall holes: On being applied to the teeth, and fixed to them with a bit of waxed thread, let a piece of flexible wire be paſſed through two of the holes; and the doubling of the ligature being carried over the tooth to be moved, the two ends of it ſhould be firmly drawn through the holes,

oles, and fixed with pliers. Every two r three days the ligature ſhould be made ghter; and this being perſevered in, al-noſt every tooth in this ſituation may at aſt be brought into the circle.

It ſometimes happens that much defor-nity is produced by an opening in the nterior part of the jaw, formed either y one or more teeth being accidentally riven out, or from there being a natural rant of them. When a ſurgeon is called mmediately on a tooth being driven out, e ſhould inſtantly replace it; or if the ooth is broken, or otherwiſe much in-ured, he may conſult the inclination of ne patient with reſpect to the tranſplant-ng of a ſound one from the mouth of an-ther perſon. But patients ſeldom com-lain till the injured parts have become nflamed and tumefied, when it is too late o put this method of treatment in prac-ice. In this ſituation we muſt wait till he pain and ſwelling are removed; when, f more than one tooth is wanting, the eficiency muſt be ſupplied with artificial

teeth fixed to thoſe that remain firm; but when one tooth only is wanting, we may frequently, in young people, be able to remove the deformity, by paſſing a ligature round the two contiguous teeth, ſo as by degrees to draw them nearer together. Nature will frequently accompliſh this, in ſome degree, of herſelf: But the operation is commonly ſlow; and beſides, it is ſeldom done ſo completely as when ligatures are employed. By this means the bodies of the teeth are equally drawn together; but when ligatures are not uſed, although the teeth, from want of ſupport, will fall nearly together at their points, the opening will commonly remain nearly the ſame at their roots.

SEC-

SECTION IV.

Of Gum Boils.

THE gums, like all the ſoft parts of the body, are liable to abſceſſes; but they are more frequent here than in other parts, from the gums being more expoſed to cauſes that tend to produce them. Abſceſſes may in this ſituation proceed from cold and from external violence, as well as from every cauſe that tends to produce inflammation in other parts; but for the moſt part we may trace them as the conſequences of toothach: And they ariſe not only from carious teeth, but from inflammation at the roots of teeth, when perhaps in every other reſpect the teeth are perfectly ſound.

A gum-boil commonly appears after a fit of toothach has continued for ſome time. It begins with ſome degree of pain, attended with a ſmall tumor on the part affected. By degrees the cheek ſwells;

and this ſwelling frequently ſpreads over the whole face, ſo as to produce much deformity. On ſuppuration taking place, the ſmall tumor, which is commonly ſeated on the outſide of the gums exactly oppoſite to the diſeaſed tooth, begins to point; and if it be not opened, it generally burſts either through an opening in the ſide of the gum or between the gum and the tooth. A quantity of matter is now commonly diſcharged, by which the patient is in general completely relieved. But as the cauſe ſtill remains, the diſcharge likewiſe continues; for the diſeaſe being moſt frequently induced by ſome affection of a tooth, or by a portion of the jaw becoming carious, a diſcharge of matter uſually continues, either till the tooth is removed, or till the carious part of the jaw has exfoliated: Or, if the opening happens to cloſe, the diſeaſe is quickly renewed: The ſwelling returns, and again goes through all the ſtages of inflammation and ſuppuration in the manner I have juſt deſcribed. When indeed the diſeaſe proceeds merely from inflammation

mation at the root of a tooth, and when the root happens not to be denuded of its periosteum, after the matter of the abſceſs is diſcharged, the ſides of it may collapſe and adhere, and a cure will in this manner take place: But when it ariſes either from a carious tooth, or from a carious portion of the jaw, or even when it proceeds from inflammation alone, if the root is laid bare by the matter, the diſeaſe will recur from time to time, till the tooth or carious part of the jaw is removed; for theſe will continue to irritate the contiguous parts in the ſame manner with extraneous bodies of any other kind. In the caſe of a ſpoiled tooth, we ſhould adviſe it to be immediately removed; but when the diſeaſe proceeds altogether from inflammation at the root of a tooth, before pulling it every method of a more ſimple nature ſhould be tried; and the ſame means that we employ for the cure of abſceſſes in other parts ſhould be put in practice here. When a free opening is formed by the burſting of the abſceſs, we may ſometimes be able to dry up the running, by injecting

injecting from time to time lime-water—ardent ſpirits—tincture of myrrh—or tincture of Peruvian bark properly diluted. But although trials of this kind may be adviſable with timid patients, who will not ſubmit to other means, we can ſeldom place much dependence upon them: Our ſureſt practice is to lay the abſceſs open by an inciſion from one end to the other, and to endeavour to heal it from the bottom by inſerting a ſmall doſſil of lint between the edges of the cut, with a view to open them, till a ſufficiency of granulations form beneath. This is the ſureſt method of obliterating the impoſthume; and when any part of the ſocket is carious, it will in this manner more readily exfoliate than it would do were it ſtill covered with the gums.

I have hitherto been ſuppoſing that the matter has been collected in the ſubſtance of the gums, or between the gums and the tooth, or perhaps that it ſurrounds the ſocket of the tooth; but abſceſſes in theſe parts are often more deeply ſeated,

when they not only create more immediate pain and diſtreſs, but more ſubſequent riſk: For when the more ſolid parts of the jaw become carious, which they commonly do when the matter of impoſthumes gets into contact with them, the cure not only proves tedious, but external marks of a diſagreeable nature are apt to enſue from them. With a view to obviate this, the uſual practice of applying warm poultices ſhould be avoided; we ſhould rather, by warm fomentations taken into the mouth, and by the application of any warm ſtimulating ſubſtance, ſuch as a roaſted onion, to that part of the gum which appears to be moſt affected, to endeavour to promote the formation of any abſceſs that may point into the mouth; and as ſoon as matter appears to be formed in it, it ought to be opened without waiting till complete ſuppuration has taken place.

In the after-treatment of the abſceſs, all that we can do is to preſerve a free depending orifice for the diſcharge of the matter,

matter, by which any farther miſchief will be prevented, and by which alone we can reaſonably expect a cure; for even where the diſeaſe is connected with a carious ſtate of the jaw, giving a free vent to the matter is perhaps all that art ought to attempt. If the conſtitution is otherwiſe ſound, this, together with the removal of any of the contiguous teeth that are diſeaſed, and of ſuch parts of the jaw as are carious and ſeparate from the reſt, will ultimately effect a cure if this by any means can be done. But in diſeaſed habits of body, eſpecially in ſcrophulous conſtitutions, this kind of tumor is always of difficult management, and can ſeldom indeed be healed till the general diſeaſe of the ſyſtem is removed.

SEC-

SECTION V.

Of ABSCESSES *in the* ANTRUM MAXILLARE.

MATTER may collect in the antrum maxillare from various cauſes: Whatever tends to induce inflammation on the lining membrane of this cavity may produce them. Hence they may be induced by blows and other injuries done to the cheeks. Inflammatory affections of the membrane of the noſe, and even long-continued inflammation of the eyes, by ſpreading to the contiguous membrane of the antrum, have often an influence in producing collections of this kind; and much expoſure to cold has frequently been traced as the cauſe of them. But their moſt frequent origin is pain and irritation excited in the jaw by repeated and violent returns of tooth-ach.

From

From this account of the cauſe, the nature of the ſymptoms will be readily underſtood. Indeed, if we make allowance for the nature of the parts in which theſe collections are ſeated, the ſymptoms will be found to be nearly ſuch as take place from inflammation and abſceſſes in other parts of the body. At firſt ſome degree of pain is felt over the cheek, and this commonly continues for a conſiderable time before any external ſwelling is perceived. On a farther continuance of the diſeaſe this pain becomes more ſevere, and in ſome inſtances ſpreads to the neighbouring parts, ſo as to create uneaſineſs in the eye, noſe, and ear; and at laſt an extenſive hard ſwelling appears over the whole cheek, which ſooner or later points at a particular place, moſt frequently in the centre of the cheek, a little above the roots of the poſterior molares. In ſome inſtances, indeed, the matter burſts out between the roots of theſe teeth and the gums, by which the external tumor upon the cheek is prevent-

ed

d from pointing. This, however, does not commonly happen; and it only takes place, I imagine, when the roots of the teeth penetrate the antrum, by paſſing through the palate at the bottom of the ſocket. For the moſt part, too, as ſoon as matter is fully formed in the antrum, we find ſome of it diſcharged by the corresponding noſtril when the patient lies upon the oppoſite ſide with his head low; and if this frequently happens, it prevents the external ſwelling for a conſiderable time from pointing at any particular place, and conſequently from burſting, which it would always do if the matter was not diſcharged in ſome other manner.

This diſcharge of matter by the duct leading from the antrum to the noſe does not indeed take place in every inſtance; but as I have met with it in ſeveral caſes, I am not inclined with Mr Hunter to conſider the obliteration of this duct as a frequent cauſe of theſe collections *: Indeed

* See a Practical Treatiſe on the Diſeaſes of the Teeth, &c. by John Hunter, F. R. S. &c. p. 44.

deed I doubt if it is ever the cauſe of them. For the moſt part, they may be traced as the effect of one or other of the cauſes that I have mentioned; particularly of toothach, or of inflammation excited in ſome other manner. When obſtructions therefore happen in this duct, they are rather to be conſidered as a conſequence of the diſeaſe: More frequently, perhaps, as the effect of the adheſive ſtage of inflammation, than as the cauſe of the collection.

A diſcharge of matter from one of the noſtrils, when it ſucceeds to pain and inflammation of the cheek, will for the moſt part be found to proceed from an abſceſs in the correſponding antrum maxillare; but we ought to remember that matter may be diſcharged from the noſtrils from other cauſes; particularly from an inflamed ſtate of the membrana Schneiderіana; from an ozena; from affections of the frontal ſinuſes; and from abſceſſes in the lachrymal ſac. In forming our opinion, therefore, every circumſtance connected

onnected with the diſcharge ſhould be ken into conſideration, otherwiſe much iſappointment may enſue from our treat- g one diſeaſe for another.

In the treatment of abſceſſes of the ntrum maxillare, nothing will accom- iiſh a cure but our giving a free diſ- harge to the matter: Collections of mat- r, indeed, in this ſituation, ſhould be onſidered in the ſame light with affec- ons of a ſimilar nature in whatever part the body they may be: Wherever atter is diſcovered, it ought to be diſ- harged; and in no inſtance is attention this more neceſſary than in abſceſſes the antrum maxillare: For if the mat- r be not diſcharged, it will diſtend and evate the bones of the cheek, and at ſt will probably render them carious.

With a view to prevent this diſtreſsful ccurrence, a perforation ſhould be made nto the antrum as ſoon as we are con- inced, from the nature of the ſymptoms, nat it contains matter. It may be per- orated in two different parts. In that

part of it which projects outwardly over the two great molares; or one of theſe teeth may be taken out and an opening made into the antrum, by perforating directly upwards in the courſe of one of the fangs. As moſt people wiſh to avoid the pulling of a tooth when not altogether neceſſary, the perforation is commonly made above the roots of the teeth. This lenity, however, proves often hurtful; for in this manner the perforation muſt be made in the ſide of the antrum, by which a depending opening cannot be given to the matter; nor can it be obtained in any other way than by making a perforation in the manner I have mentioned in the direction of one of the roots of the teeth.

I have already obſerved, that either of the two large molares may be drawn in order to admit of this perforation. When either of them is ſpoiled, the diſeaſed tooth ſhould be taken out; for, being carious, there will be cauſe to ſuſpect that it may have ſome ſhare in the formation

f the diſeaſe: But when this is not the aſe, we ſhould remove the ſecond great olaris, or that tooth which lies next to ue dens ſapientiæ; for although the ooth immediately anterior to this is omewhat more acceſſible, the difference n this reſpect is inconſiderable; and the late of bone that ſeparates the antrum rom the roots of the teeth being thinner n the back part of the jaw than in the nterior part of it, the perforation is accordingly more eaſily made in it.

On removing one of theſe teeth, it ſometimes happens, that the matter is immediately diſcharged with freedom from the ntrum; owing either to the roots of the eeth having been ſo long as to paſs into his cavity; or, to the matter having orroded the bone that ſeparates the roots of the teeth from the antrum: In this aſe, if the opening is ſufficient for giving a free vent to the matter, the operation will thus be completed: But as it is aſily enlarged, it ought always to be done where there is cauſe to doubt that

the matter will not be diſcharged with freedom; and, when no diſcharge of matter takes place on pulling the tooth, an opening muſt be made into the antrum in the manner I have already adviſed, by puſhing a ſharp inſtrument into it in the direction of one of the fangs. A common trocar is uſually employed for this, and in general the operation may be well enough done with it; but the curved inſtrument repreſented in Plate XXV. fig. 2. anſwers better. In making the perforation, the patient ſhould be ſeated on the floor oppoſite to a clear light, and his head ſhould be laid back upon the knee of the operator, who may either ſtand or ſit behind him. The inſtrument ſhould be withdrawn as ſoon as it has entered the antrum, which is eaſily known by the reſiſtance being removed from the point of it. The matter will now flow out freely; and as ſoon as it is all diſcharged, a ſmall wooden plug exactly the ſize of the trocar ſhould be introduced into the opening, with a view to prevent not only the

ne air, but the food in maſtication, from etting into the antrum; and when the lug is properly fitted to the opening, it ill remain ſufficiently firm, while at the me time there is no riſk of its ſlipping n, if formed with a knob or head ſome- hat larger than the opening.

This plug ſhould be removed from time o time, perhaps twice or thrice in the ourſe of a day; by which all the matter ill be quickly diſcharged; and no more eing allowed to collect, the diſpoſition o form it will in general be ſoon remo- ed, and a cure will thus be obtained. ut in ſome inſtances, either from much elaxation of the lining membrane of the ntrum, or from a tendency in that mem- rane to inflame, the diſcharge of mat- er does not diminiſh, but continues near- y the ſame both in quantity and conſiſt- nce long after the operation. In this aſe we may often forward the cure by hrowing liquids of a moderate degree of ſtringency from time to time into the ntrum. A decoction of bark is com-

monly employed for this purpoſe: But nothing ſhould be uſed that contains the leaſt particle of ſolid matter, as there is always ſome riſk, when liquids not properly filtered are injected, of depoſitions being left in the antrum; and in different inſtances I have ſeen miſchief enſue from this. I commonly employ a ſolution of alum, or ſaccharum ſaturni, brandy properly diluted, or lime-water.

When the contiguous bones are found, a cure will at laſt be accompliſhed by a continuation of theſe means; but when any of theſe bones are carious, it will be in vain to expect a cure till the diſeaſed portion either exfoliates, or diſſolves and comes away in the matter. By the introduction of a probe we may always know whether the bones of the antrum are carious or not; but in general we may reſt our judgment upon this point on the ſmell and appearance of the diſcharge. When the bones are carious, the matter is always thin and fetid, and it becomes thicker

nicker and leſs offenſive as this ſtate of
ne bone diminiſhes.

I have hitherto been ſuppoſing that the
ntrum is perforated for the purpoſe of
iving a diſcharge to matter; but the
me operation becomes neceſſary for the
emoval of other cauſes. I once met with
n inſtance of a violent blow on the cheek
nding in a large collection of blood in
his cavity; and worms that form in it
an only be removed by this operation.
n what manner worms are produced in
his ſituation is difficult to determine;
ut whenever their preſence is indicated
y ſevere pains in the region of the an-
rum, not induced by toothach or any o-
her obvious cauſe, there can be no riſk
n making an opening for extracting them;
but in this caſe there is no neceſſity for
removing any of the teeth. A perfora-
tion made into the antrum, immediately
above the roots of the large molares, will
anſwer the purpoſe ſufficiently. We
ſhould not however reſt ſatisfied merely
with extracting ſuch worms as appear at

the opening: We ſhould inject from time to time ſuch liquids into the antrum as will moſt probably deſtroy any that may remain; particularly oil, a filtrated ſolution of aſafœtida, and perhaps a weak infuſion of tobacco: And the perforation ſhould be kept open for a conſiderable time, to prevent as much as poſſible the riſk of any worms being left.

I have mentioned the only two parts in which I think the antrum can with propriety be opened; namely in the direction of the roots of the two large molares of the upper jaw; and immediately above the roots of theſe teeth on the outſide of the jaw. I think it right however to obſerve, that it has been ſaid that a perforation may be alſo made into the antrum from the noſtril. None will doubt of this being practicable; but we might with perhaps equal propriety ſay, that an opening may be made into it by entering the inſtrument from the roof of the mouth. It is evident, however, that it would not be ſo proper to perforate the

antrum

ntrum in either of theſe parts as in thoſe
at I have mentioned; and therefore I
ould not have judged it neceſſary to no-
te them here, were it not with a view
give my opinion of this method of ma-
ng an opening from the noſtril; which
ing propoſed by very reſpectable autho-
y, I think it right that the younger
rt of the profeſſion, for whom this is
iefly intended, ſhould know that there
much cauſe to doubt of the propriety
the advice *.

By purſuing the means that I have
inted out, all ſuch ſymptoms as ariſe
om collections in the antrum maxil-
re may be removed: But the antrum
liable to ſwellings of a different
nd, of a more hazardous nature, and
nich frequently do not terminate but
the death of the patient. The tu-
ors to which I allude ſeem to proceed
om an enlargement of the bones of the
eek. No matter is found in the an-
trum;

* Vide the Natural Hiſtory of the Human Teeth,
rt II. p. 46. firſt Edition. By John Hunter, F. R. S.
.

trum; and therefore no advantage is de-
riyed from our making an opening into
it. I have in different inſtances, indeed
obſerved much miſchief enſue from it
For thoſe who are not accuſtomed to
this branch of practice are apt to be miſ-
led by the ſtate and appearance of the
ſwellings; and ſuſpecting that they con-
tain matter, they very commonly make
perforations into them, which frequently
aggravates all the ſymptoms by occaſion-
ing a more rapid increaſe of the diſeaſe
We ſhould therefore attentively diſtin-
guiſh between ſwellings of this kind and
real collections of matter in the antrum
In the latter the cheek ſeldom ſwells to
any great extent; and when the diſeaſe i
of long duration, if the matter does no
find an opening into the noſtril, or alon
the roots of the teeth, it commonly point
towards the moſt prominent part of th
cheek. But when no matter is collected
and when the diſeaſe proceeds from a ca
rious ſtate of the bones, the ſwelling b
degrees arrives at a conſiderable ſize, bu

ſpreads equally over the whole cheek, ithout pointing at any particular part, cepting in its more advanced ſtages, hen the ſurrounding ſoft parts becoming ffected, matter ſometimes forms in them. ill the ſkin becomes inflamed, which es not happen till the diſeaſe has been of ng continuance, the ſwelling remains rfectly colourleſs. But the moſt cha-cteriſtic mark of it is a remarkable de-ee of elaſticity that it acquires. The nes yield to preſſure; but they inſtant-return to their ſituation on the finger ing removed; and if in this ſtate an ciſion is made into them, which in dif-rent inſtances I have known done, they e found to be reduced to a ſoft cartila-nous ſtate, and in the advanced ſtages the diſeaſe to a conſiſtence ſomewhat elatinous.

This kind of ſwelling is of a nature ſo ry obſtinate, that hitherto I have ſcarce-known any advantage reſult from any medy that has been employed for it. a few caſes where it appeared to be produced

produced by carious teeth, the removal of the teeth has put a temporary ſtop to its progreſs. But even this has never produced any permanent advantage; I mean in the diſeaſed ſtate of the bone that we are now conſidering; for the cheek is, like other parts of the body, liable to ſwellings of a more harmleſs nature, which yield to the remedies commonly employed for them. But in this no benefit occurs either from internal medicines or external applications. A long continued gentle courſe of mercury along with decoction of mezereon, I have ſometimes known prove uſeful; but the good effects reſulting from theſe or any other remedy have never been of long duration.

SEC

SECTION VI.

Of EXCRESCENCES *on the* GUMS.

EXCRESCENCES of different degrees of firmneſs occaſionally form upon the ms: They are all of a red colour, near- the ſame with the gums themſelves; t ſome of them are ſoft and fungous, ile others are firm, and even of a hard rty nature. In ſome, they are pain- l; but for the moſt part they create no rther inconvenience than an impediment ſpeech and maſtication. We meet with em in both jaws, but moſt frequently the under jaw, and in the inſide of the eth. In ſome inſtances they are con- cted to the gums by a ſmall neck, but in neral they adhere firmly through their hole extent.

This kind of excreſcence frequently o ginates from carious teeth, and in a few inſtances

inſtances from a carious ſtate of the al
veoli; in which caſe the removal of th
ſpoiled teeth, and the ſubſequent exfolia
tion of the carious part of the jaw, wil
often accompliſh a cure. Like fungou
excreſcences in other parts of the bod
ariſing from a carious bone beneath, a
ſoon as the diſeaſed part of the bone i
removed, the excreſcence uſually begin
to ſhrivel, and at laſt it commonly diſap
pears entirely: But when this does no
happen, it ſhould be removed as ſoon a
it gives pain; and this ſhould be the mor
readily propoſed, as the operation is at
tended with little or no riſk. An aver
ſion, indeed, generally prevails againſ
meddling with this kind of tumor, ei
ther from an idea of its being cancerous
and that it will probably be rendere
more inveterate by an operation; or fro
a dread of the hemorrhagy that the ope
ration will induce. I know, however
from experience, that in general there i
no cauſe to be afraid of this. I have ex
tirpated ſeveral tumors of this kind; an

never knew an inſtance of cancer ha-
ng followed, or of any hemorrhagy of
uch importance.

When the excreſcence is attached to
e gums by a narrow neck, it ſhould be
moved by paſſing a ligature round it of
ſufficient tightneſs for making it fall off;
t when connected to the contiguous
rts by a broad baſe, we are under the
ceſſity of taking it away with the ſcal-
l. The actual and potential cautery
d to be employed for this; but as this
actice is now laid aſide, and will not
dily be revived again, I do not think
neceſſary to ſpeak of it farther.

In proceeding to the extirpation of the
nor, the patient ſhould be firmly ſeated
poſite to a clear light, with his head
ported by an aſſiſtant ſtanding behind.
he is poſſeſſed of ſufficient reſolution,
inſtruments will be needed for keeping
e mouth open; but where we cannot
th certainty truſt to this, which with
ildren is commonly the caſe, a ſpecu-
n oris becomes requiſite. Of this in-

ſtrument,

ſtrument, we have various forms. Thoſe in common uſe are repreſented in Plate XLI. fig. 2. and 3.; but they occupy too much ſpace in the mouth to admit of the free application of other inſtruments. To obviate this, I ſome time ago propoſed the one delineated in the ſame Plate, fig. 1. and by experience it is found to anſwer.

A common ſcalpel will for the moſt part anſwer for diſſecting the tumor away; but an operator ſhould always be provided with others, particularly with a curved knife, ſuch as is repreſented in Plate XXI. fig. 1. and likewiſe with crooked ſciſſars, ſuch as are delineated in Plate XXXVI. fig. 1. and 2.; for in ſome caſes the roots of the excreſcence are more eaſily ſeparated with a curved ſcalpel and ſciſſars, than with thoſe of a ſtraight form. But whatever inſtrument is employed, much advantage may be derived from raiſing the tumor as much as poſſible from the parts beneath with a diſſecting hook; and for this purpoſe a hook ſhould be uſed with two fangs, ſuch as is repre-

ſented

nted in Plate XXXVII. fig. 3. In the urſe of the operation, care ſhould be ken to remove the diſeaſe entirely, at the me time that the inciſion ſhould not be rried ſo deep as to injure the parts be-ath, unleſs the tumor is firmly and cloſely ttached to them; in which caſe, it may t only be proper to remove a portion the gums, but even to go to the depth the ſocket: But as this will incur the k of injuring the contiguous teeth by ying their roots bare, it ſhould never adviſed when with any propriety it can avoided.

After the operation the blood-veſſels at have been divided ſhould be encou-ged to bleed freely: But when the he-orrhagy proceeds too far, it ſhould be ſtrained, by the patient being made to ke from time to time a mouthful of ſpi-t of wine or tincture of myrrh; or if is does not prove ſufficient, the appli-tion of lunar cauſtic to the bleeding ar-ries will ſeldom or never fail.

The ſituation of the ſore renders th
application of dreſſings inadmiſſible: Fo
ſome days, however, after the operatio
the mouth ſhould be frequently waſhe
with a warm emollient decoction; an
afterwards, if a cicatrix does not readil
form, the cure may be promoted by th
application of lime-water, Port-wine, tinc
ture of roſes, and other mild aſtringent

SEC

SECTION VII.

Of Looſe Teeth.

THE teeth ought naturally to continue
. firm till they become looſe by the
inary effects of old age: But they are
ole to diſeaſes which render them looſe,
l which even make them drop out at
ly periods of life; and as this is often
cauſe of much diſtreſs and deformi-
it becomes frequently an important
ect with practitioners.

As the teeth may become looſe from
ious cauſes, all of which require a dif-
ent method of treatment, I ſhall enu-
ate the moſt material, and at the ſame
e ſhall point out thoſe means of cure
ch ſeem to be beſt adapted for each
them.

The teeth are frequently looſened by
ernal violence: By falls and blows—

and often by an improper uſe of inſtruments in pulling the contiguous teeth.

Teeth looſened in this manner can be made faſt only by being kept for ſome time firmly in their ſituation; which may be done by preſſing them as far into the ſocket as they will go, and fixing them with ligatures of Indian-weed, catgut, or waxed ſilk, to the contiguous teeth, and feeding the patient upon ſpoon meat till they become firm.

In youth, when teeth are looſened by external violence, as the ſockets at this age are complete, they readily become firm again when kept a due time in their ſituation with ligatures: Nay, even when forced entirely out of the ſockets, they will ſoon become firm, if they are immediately replaced and retained in their ſituation. I have in ſeveral inſtances put this method of treatment ſucceſsfully in practice, and no harm can reſult from the trial. But in old age, whatever may be the cauſe of teeth becoming looſe, the chance of their ever becoming firm

in is exceedingly ſmall; ſo that in ad-
nced periods of life the practice ſhould
ver perhaps be attempted.

The teeth ſometimes become looſe from
ck layers of tartar forming over them,
paſſing in between their roots and
gums, and in ſome caſes even between
ir roots and the ſockets. In this caſe,
removal of the cauſe, if it has not
ſiſted long, will commonly remove the
ct. That the operation, however, may
ve effectual, the tartar ſhould be com-
tely ſcaled off, and it ought to be done
lly; for the longer the teeth remain
ſe, the leſs chance there is of their ever
ain becoming firm.

In ſome inſtances, they become looſe
m the gums having acquired a ſpongy
tneſs, and ſeparating not only at their
cks, but often a conſiderable way down
m the roots. This is ſometimes the
ect of a long continued courſe of mer-
ry; but it is commonly, although often
properly, ſuppoſed to proceed from ſcur-
: We no doubt meet with it as a ſymp-

tom of real ſea-ſcurvy: but this is a ver uncommon diſeaſe at land; while the o ther, *viz.* a ſoft ſpongy ſtate of the gums is frequently met with.

When, however, it proceeds from a ge neral ſcorbutic ſtate of the ſyſtem, no thing but a removal of this will accom pliſh a cure; but when entirely local, to pical remedies are alone to be truſted When teeth have remained long looſe we can never with certainty ſay tha any means we may employ will rende them firm; but the moſt effectual reme dy that hitherto has been employed, is frequent ſcarification of the gums bot in the outſide and inſide of the looſe teeth The inciſions ſhould be carried deepl into the ſubſtance of the gums: The ſhould be allowed to diſcharge freely, an ſhould be repeated from time to time a long as any of the teeth remain looſe In this manner that ſpongy ſtate of th gums that I have deſcribed, is often re moved, and a diſpoſition produced i

then

em to adhere to the inveſting membrane
the teeth, by which they often become
m and healthy.

With a view to remove this ſpongy ſtate
the gums, aſtringents are commonly
eſcribed; but I have ſeldom known any
vantage enſue from them: On the con-
ary, a frequent uſe of them ſeems to do
arm, by inducing a diſpoſition in the
ms, that deprives them for ever of the
wer of adhering to the parts beneath:
t leaſt, I have met with different inſtan-
s where this was evidently the caſe; in
hich by a long continued uſe of aſtrin-
nts, the gums became ſo hard and firm,
at the ſcarifications afterwards employ-
d had no effect in fixing them. They
ould not therefore be uſed till adheſion
kes place between the gums and teeth,
ither by means of ſcarifications, or in
me other manner; and this being ac-
omplifhed, they may be employed with
reedom, and even with advantage. The
emedies of this claſs that are moſt to be

truſted, are, tinctures of Peruvian bark, and of oak bark, tincture of myrrh, and a ſtrong ſolution of alum. The mouth ſhould be frequently waſhed with cold water, ſtrongly impregnated with any of theſe, at the ſame time that the patient ſhould be directed not to uſe the looſe teeth, till they have for ſome time been perfectly firm.

The teeth ſometimes become looſe by abſceſſes forming between their roots and the alveoli; eſpecially when the alveoli, from being thus immerſed in matter, at laſt become carious: But this having already been minutely treated of in the fourth ſection of this chapter, when ſpeaking of gum-boils, I muſt now refer to what was then ſaid upon it.

It is ſcarcely neceſſary to mention the looſening of the teeth that occur in old age; for this takes place from a cauſe for which there is no remedy. Not from the roots of the teeth decaying, or from their being puſhed out of their ſockets, but

from a real annihilation of the ſoc-
ts; probably in conſequence of the of-
ous matter of which they are compoſed
ing abſorbed, while nature having now
uſe for teeth, does not continue to
pply it.

SEC-

SECTION VIII.

Of CLEANING *the* TEETH.

THE teeth are apt to become foul from different cauſes, and frequently require the aſſiſtance of a dentiſt to render them clean.

1. They ſometimes loſe their natural healthy colour, and acquire a duſky yellow hue: Or they become to a certain degree black, without any adventitious matter being perceptible on any part of them.

2. At other times they become foul, and give a diſagreeable putrid taint to the breath, merely from a too long remora of the natural mucus of the mouth.

3. But the moſt frequent cauſe of foul teeth is a calcareous matter that forms upon them, commonly termed the Tartar of the Teeth, which ſeems to be a depoſition from the ſaliva, as calculi in the bladder

ladder are from the urine. Few people re entirely exempted from this; but ome are much more liable to it than o-hers, inſomuch that I have known dif-erent inſtances, of the teeth becoming hickly incruſtated with it in the courſe f a few weeks after they were complete-y freed from it.

Tartar firſt appears in the fore-teeth, nd in thoſe parts of them that are leaſt iable to be rubbed upon by the tongue r lips. Hence it is firſt perceived on he outſide, in the angles between two f the teeth near to the junction of the ums. The ordinary effects of maſtica-ion prevents it in general from ſpreading owards the points of the teeth: But the liſpoſition to form it is in ſome conſtitu-ions ſo great, that I have known it proceed rom the gums upwards even over the flat urfaces of the grinders; and in ſuch inſtan-es, when not removed, it is apt to ſpread ver the whole teeth, and to give the ap-earance of a continued incruſtation from ne end of the jaw to the other. In ſome

caſes

caſes again, inſtead of paſſing over the whole, it ſeems to fix more particularly on one or two of the teeth; and in ſuch inſtances the depoſition of this matter goes on ſo quickly as to give cauſe to ſuſpect that the whole calcareous matter of the mouth is by ſome cauſe or other attracted to this particular point. I have known one or two teeth completely covered with it in the ſpace of a few weeks, while none of it formed in any other part of the mouth. In ſome theſe partial incruſtations are ſo large as to disfigure the external appearance of the cheek; and, by thoſe not accuſtomed to this branch of practice, they are ſometimes miſtaken for diſeaſes of a worſe nature: they have even been treated as exoſtoſes ariſing from the jaw bone.

While the tartar conſiſts of a thin ſcale only, and as long as it is confined to the external ſurface of the teeth, and does not prove hurtful to the gums, it ſeldom meets with much attention: But when it forms in any conſiderable quantity, it very

ary commonly hurts the gums by pro-
cing ſlight ulcerations upon thoſe parts
which it lies contiguous; or, it inſi-
uates between the gums and the alveoli,
as to ſeparate them to a conſiderable
epth from each other. In either of
heſe events, thoſe means ſhould be em-
oyed by which we know that it will be
oſt effectually removed.

When the teeth have remained long co-
ered with any kind of extraneous matter,
it has acquired any degree of firmneſs,
cannot be removed but with the help
f inſtruments. Even a ſlight diſcolour-
ng, although not attended with any per-
eptible covering of an adventitious mat-
er, when of long continuance, it can ſel-
om be removed in any other way. But
hen once the teeth are thoroughly ſcaled
ith inſtruments, they may in general be
reſerved in this ſtate with an ordinary
egree of attention. Frequent waſhing
ith cold water; and rubbing every ſe-
ond or third morning with burnt bread;
Peruvian bark; cream of tartar; chalk;

or

or any other mild ſubſtance in fine powder, will for the moſt part keep them clean and white: But this we muſt obſerve is not univerſally the caſe; for the tendency I have mentioned to a foulneſs of the teeth, eſpecially to a depoſition of tartar, is in ſome inſtances ſo great, that the greateſt pains and attention does not prevent the renewal of it. This, however, is not frequent; for it is well known, that due attention to cleanlineſs will very generally prevent every formation of this kind.

I have ſaid, that when once the teeth have become foul, they cannot be cleaned but with the help of inſtruments. This is at leaſt the beſt, as it is the ſafeſt and ſureſt method. It is neceſſary, however, to obſerve, that rubbing the teeth with acids of a certain ſtrength, will in general render them perfectly white; for the tartar and other kinds of matter that adheres to them being ſoluble in acids, a frequent uſe of them removes it completely; and we accordingly find, that

ids of one kind or another form the ba- of almoſt every waſh that has been ad- rtiſed for the teeth. The public, how- ver, ſhould be much on their guard a- inſt all applications of this kind; for e teeth themſelves are very apt to be urt by acids, inſomuch that it is per- ps impoſſible to employ acids of a ſuffi- ent ſtrength for diſſolving any extrane- us matter upon them, that will not at e ſame time prove injurious to the ena- el. Every one knows that even the ildeſt vegetable acid will render the eth rough, and ſet them on edge: We ay therefore ſuppoſe, that thoſe of a rong nature, the mineral acids, very ommonly uſed by itinerants for this pur- oſe, muſt prove much more hurtful; nd in fact many have loſt their teeth en- rely by the uſe of them.

It is indeed ſaid by many, that in clean- g the teeth of tartar the inſtruments ave done much harm, by hurting the namel. This I believe has in ſome in- ances happened: But it ſhould not be conſidered

conſidered as the fault of the remedy, but of the manner of uſing it. A ſharp inſtrument may no doubt be ſo improperly applied as to remove the enamel; but this muſt always be the fault of the operator: For every incruſtation to which the teeth are liable may be taken off with ſafety, and without doing any injury to the teeth.

In Plate LVIII. inſtruments of various forms are repreſented for this operation. Figs 2. 3. and 4. are the beſt, and will anſwer for moſt purpoſes; but the others are ſometimes neceſſary for the removal of ſuch parts of the incruſtation as form between the teeth. They ſhould all be moderately ſharp, otherwiſe the operation is done with difficulty: But the edge of none of them ſhould be fine, otherwiſe it will be apt to turn, and even to break, with the force neceſſary for ſcaling off the tartar.

In performing this operation, the patient ſhould be placed upon a low ſeat, with his face oppoſite to a clear light and his head ſupported by an aſſiſtant. The

ſurgeon

urgeon himſelf ſhould be ſeated upon a hair ſomewhat higher. It is commonly indeed done while the operator is ſtanding; but I have in different parts of this work had occaſion to remark, that ſurgeons ought to ſit at every operation when can with propriety be done.

The ſurgeon ſhould now wrap the forefinger of his left hand in a wet cloth, with which he ſhould preſs firmly upon the point of the tooth intended to be firſt cleaned, while the back part of the ſcaling inſtrument will form a point of reſiſtance for the thumb of the ſame hand. In this manner the tooth may be firmly ſupported ſo as to prevent every riſk of its being looſened by the inſtrument. This in every caſe is a neceſſary precaution; but eſpecially when any of the teeth are looſe.

The ſharp edge of the inſtrument is now to be inſinuated beneath the under part of the incruſtation, care being taken to avoid the neck of the tooth, otherwiſe, if puſhed down this length, and if much force is employed, there will be much

riſk of looſening, or even of turning out the tooth entirely. On being certain that the inſtrument is properly placed, it muſt be puſhed with firmneſs from below upwards to the top of the tooth, and muſt be repeatedly applied in the ſame direction till all the incruſtation is removed. And one tooth being cleaned, all the reſt that require it muſt be treated in the ſame manner. This being done, the teeth ſhould all be well rubbed over with a bit of ſponge in the form of a bruſh, covered with a fine powder prepared of equal parts of cream of tartar and Peruvian bark; and this being continued from time to time, farther aſſiſtance will ſeldom be required: But if, notwithſtanding of this, the teeth ſhall again become foul, any new incruſtation muſt be ſcaled off in the manner I have mentioned.

This is the beſt and moſt effectual method of cleaning the teeth when they become foul from extraneous matter having formed on them; but they ſometimes loſe their

eir colour, as I have already obſerved, id acquire a kind of foulneſs, when no cruſtation is perceived on them: Even this caſe, as long as the ſurface of the eth remains ſmooth and ſound, mode-te friction with the edge of a ſcaling ſtrument will frequently prove uſeful; id if the operation is done with cau-on, no riſk will accrue from it. But hen the teeth become black from this uſe, we ſometimes find the enamel cor-ded, or perforated as it were with an finite number of ſmall holes; and this, muſt obſerve, is the worſt kind of foul-eſs to which they are liable: For it is fficult to remove, and when removed, in general ſoon returns, nor does it com-only ſtop till all the teeth that it has at-cked are deſtroyed.

As this kind of foulneſs cannot always e removed with inſtruments, we endea-our to diſſolve it with ſome chemical pre-aration. All the mineral acids will do it n the moſt effectual manner; but for the eaſons I have given, they ought never

to be uſed. I have commonly employed ſaponaceous, or even pure alkaline applications; by which the teeth may be often rendered perfectly clean without any injury being done to them. A ſtrong lather of common ſoap will often anſwer; and a ſolution of ſalt of tartar applied over the teeth with a ſmall pencil or bruſh, proves in ſome inſtances equally ſucceſsful.

When in this manner the foulneſs is removed, the moſt effectual means for preventing a return of it, is to waſh the teeth frequently with cold water, and to rub them from time to time with one of the powders that I have mentioned. I have ſometimes, too, thought that repeated applications of tincture of Peruvian bark have ſerved to prevent it. As this variety, indeed, of foul teeth ſeems to depend upon ſome degree of putreſcency; for it is evidently attended with a caries or mortified ſtate of the diſeaſed teeth; there is cauſe to imagine that

that antiſceptics of every kind would prove uſeful in the method of cure.

For the purpoſe of applying powders and other applications to the teeth, bruſhes of different forms, and various kinds of roots properly prepared, are daily uſed. Lucerne and alkanet roots dried and beat at one end into the form of a bruſh, are much employed for it, and they may be uſed both with ſafety and advantage for cleaning the interſtices between the teeth: But neither theſe, nor any kind of bruſh ſhould be employed for rubbing the roots of the teeth and upper parts of the gum; for as their points paſs between the gums and the ſockets, they are apt to ſeparate the one from the other, from which much miſchief is apt to enſue. For this reaſon, I always employ a piece of ſponge fixed in a ſmall handle, with which the roots of the teeth may be rubbed with ſafety.

END OF VOLUME FOURTH.

EXPLANATION

OF THE

PLATES.

Plate XII.

Fig 1. A Delineation of ſome parts of the eye, referred to in different parts of Chapter XI *.

a, Theſe points repreſent the openings or orifices of the glands of Meibomius; by which, a viſcid glutinous ſubſtance, commonly termed the Gum of the Eyes, is ſeparated and diſcharged.

d, The caruncula lachrymalis.

* Vide Deſcriptio Anatomica Oculi, Iconibus illuſtrata. Auctore Johanne Getfreid, Zinn. M. D.

c, The membrana ſemilunaris, which ſeems to have ſome effect in directing the tears towards the puncta lachrymalia *b* from whence they are conveyed by their correſponding ducts into the ſaccus lachrymalis *e*, and afterwards to the noſtril by the naſal duct.

In the cure of the fiſtula lachrymalis, it is of the utmoſt importance to be well acquainted with the anatomy of theſe parts. This delineation will convey a more exact idea of them than could be given by deſcription.

Fig. 2. A ſharp-pointed inſtrument from its figure termed a Haſta, uſed in ſome parts of the Continent for fixing the eye in extracting and couching the cataract: It does not anſwer the purpoſe however ſo well as different inſtruments to be hereafter deſcribed.

Fig. 3. A ſpeculum oculi in common uſe, but it does not fix the eye ſo well or ſo eaſily as the ſpeculum delineated in Plate XIV. or the inſtrument, fig. 5. Plate XXII.

Fig. 4. A very uſeful form of knife for various operations on the eye-ball and eye-lids, particularly for cutting or ſcarifying turgid blood-veſſels upon the eye: A lancet is commonly uſed for this; but this knife is uſed with more ſteadineſs, and being round or blunt on the back, it does not ſo readily injure the contiguous parts.

Plate XIII.

Fig. 1. A bandage for the eyes; by which any quantity of light can be admitted that a patient may wiſh for, while at the ſame time the eyes are ſufficiently protected, without being kept too warm, or too cloſely tied down, as is commonly done with the bandages uſually employed. It conſiſts of two pieces of poliſhed timber excavated into the form of cups, correſponding to the ſize of the eyes for which they are intended: And theſe being covered with a black or green riband, the inſtrument is fixed by the riband tied round the head.

Fig. 2. A cup of an oval form, for the purpoſe of bathing the eyes either with water or any other liquid. Being of an oval form correſponding to the ſize and figure of the orbit, the eye can be more effectually waſhed or bathed in any liquid contained in it than in any other manner.

Fig. 3. A bag of reſina elaſtica, fitted with an ivory pipe for the purpoſe of throwing warm water between the eye-lid and ball of the eye, in order to remove ſand, lime, or any other extraneous matter that happens to be lodged between them.

Figs. 4. and 5. Pipes of different forms, that may be occaſionally fitted to one of theſe bags.

Fig. 6. A flat-hook, either of poliſhed ſilver or ſteel, for ſeparating the eye-lids from each other. This is commonly done by the fingers of the operator, or by an aſſiſtant; but in many of the more minute operations on the eye, this kind of flat hook is employed with much advantage

vantage: ſo that every ſurgeon in this branch of buſineſs ſhould be poſſeſſed of it.

Plate XIV.

The figures of this plate repreſent different views of an inſtrument frequently mentioned in the courſe of this work. Various forms of a ſpeculum oculi have been delineated in books; but they have ſeldom been uſed in practice. They have in general been found either to compreſs the eye too much, ſo as to induce pain and inflammation; or not to fix it ſufficiently. The inſtrument here repreſented, when properly poliſhed, creates little uneaſineſs, at the ſame time that the eye may be ſo compreſſed with it as to be kept perfectly ſteady. The handle may be either of ſteel or timber, but the reſt of it ſhould be made of ſilver or fine poliſhed ſteel. Operators ſhould be provided with ſpecula of different ſizes. The views here delineated are taken from a ſize that anſwers for moſt part of adults

A well adapted ſpeculum is an uſeful inſtrument in many diſeaſes of the eyes, but particularly in the operations of couching and extracting the cataract. As it has been imagined that it may be an advantage to be able to withdraw the ſpeculum while the knife or needle remains in the eye, it has been propoſed to leave a vacant ſpace for this purpoſe in the circle which ſurrounds the eye-ball, as is repreſented in fig. 3. The ſpeculum ſhould be always kept, however, upon the eye, as long as either the extracting knife or couching needle remains in it, otherwiſe the eye cannot be rendered ſufficiently ſteady: But to thoſe who are of a different opinion, this form of the inſtrument delineated in fig. 3. will anſwer the purpoſe exactly.

Plate XV.

Fig. 1. A couching needle of the beſt form I have ever uſed. It penetrates the eye more readily than the round needle, fig. 2. and the cataract is more eaſily depreſſed with it.

Fig.

Fig. 3. A needle of a flat form ſimilar fig. 1. with a ſmall curve near to the point. With this curve I have ſometimes found that the cataract is more eaſily depreſſed than with a ſtraight needle; but I have not yet uſed it ſo frequently as to be able to ſpeak with certainty about it.

Figs. 4. and 5. Two needles, for performing the operation of Couching, by entering the inſtrument at the internal angle of the eye, and puſhing it out towards the other. By which means the operation may be done upon the right eye with the right hand; whereas, with the common ſtraight needle, the left hand muſt be uſed for the right eye; a degree of ſteadineſs, which ſome practitioners cannot always attain with the left hand.

All theſe inſtruments are delineated of the ſize exactly fit for uſe. The handles ſhould be made of light timber, and the ſteel part of them ſhould be poliſhed in the moſt exquiſite manner. None of them ſhould exceed forty grains in weight.

Plate XVI.

Fig. 1. A form of knife for the operation of extracting the cataract. It ſhould be tolerably firm and highly poliſhed. Near the point both ſides of the knife ſhould be ſharp, by which the cornea is more eaſily penetrated, but backwards the upper edge of it ſhould be round; which not only gives more ſtrength to the inſtrument, but makes the riſk leſs of hurting the iris.

Fig. 2. A knife of the ſame form in the cutting part of it with fig. 1. But by means of the bend, the operation may be performed on the right eye with the right hand of the ſurgeon.

Fig. 3. A knife commonly uſed in Germany in extracting the cataract.

Fig. 4. A ſmall ſcoop for removing either the whole body of the lens, or any part of it, when in extracting the cataract it happens to lodge either in the pupil or anterior chamber of the eye between the iris and tranſparent cornea.

Plate XVII.

Fig. 1. A delineation of the eye with the couching needle inſerted into it.

Fig. 2. The knife employed for dividing the cornea in extracting the cataract, is here inſerted acroſs the eye, between the cornea and iris. And in fig. 4. the cut is delineated which ought to be formed in the cornea in the uſual method of performing this operation. Fig. 3. repreſents the cornea divided in the ſuperior part of it, in the manner I have mentioned in deſcribing the method of extracting the cataract.

Plate XVIII.

Fig. 1. A view of the right eye with one of the curved needles of Plate XV. inſerted into it; by which it is evident that a cataract may be couched in the right eye with the right hand of the ſurgeon.

Fig. 6. Repreſents a curved knife inſerted beneath the cornea in the operation

tion of extracting the cataract with the right hand from the right eye.

Fig. 2. A ſharp curved probe for removing the cataract, by making an opening behind the iris, in the manner I have adviſed in the Chapter on that operation.

Fig. 4. Small forceps, which may occaſionally be employed for the ſame purpoſe.

Fig. 5. A flat curved probe, either of gold or ſilver, for inſerting through the pupil, in order to tear or form an opening in the capſule of the lens, ſo as to admit of an eaſy expulſion of the cataract.

Fig. 3. A tube of ſteel with an edge ſufficiently ſharp for penetrating a hard bone, by which a portion of the os unguis, correſponding to the ſize of the tube, may be removed, when in the operation for the fiſtula lachrymalis this may be judged proper.

Plate XIX.

Fig. 1. An inſtrument for the purpoſe of compreſſing the lachrymal ſac. *AA*, a curved

ed plate of ſteel covered with flannel or lk, and adapted to the forehead, upon hich it is fixed by the ribands *CC*. *B*, Ano- er plate of ſteel connected to the former; hich paſſing back towards the occiput, rves to fix the machine with more cer- inty by means of the riband at its ex- emity. *D*, a ſmall moveable bar of eel, paſſing through an opening in the ate *AA*, to be firmly fixed at any par- cular height by the ſcrew *F*. *G*, a ſmall uſhion or button of ſteel covered with lk or ſoft flannel; which being placed on the corner of the eye immediately ove the lachrymal ſac, any neceſſary egree of preſſure may be applied by eans of the ſcrew *H*. The moveable ar *D* is ſeparated into two pieces by a rew at *E*; ſo that by turning this ſcrew, e cuſhion *G* may be turned more or leſs tward at pleaſure, according to the par- cular form of the part on which it is to e applied.

The inſtrument here delineated is in- nded for the left eye; but it is eaſily made

made to anſwer the right eye by moving the bar *D* into the ſlit or opening on the oppoſite ſide of the plate *A A*.

Fig. 2. A trocar and canula, for perforating the os unguis in the operation for the fiſtula lachrymalis.

Fig. 3. The ſtilette; and, fig. 4. the canula, repreſented ſeparately.

Fig. 5. A curved trocar; the inſtrument commonly employed for the fiſtula lachrymalis. The ſtraight trocar, however, fig. 2. anſwers better.

Plate XX.

Fig. 1. A ſilver ſyringe for the purpoſe of throwing liquids into the lachrymal paſſages. Fig. 4. A curved tube, adapted to the ſyringe, and of a proper ſize for being inſerted by the noſtril into the extremity of the naſal duct of the lachrymal ſac. Fig. 5. A ſmall tube, of a ſize correſponding to the lachrymal puncta, for throwing injections through theſe openings into the ſac. Figures 6. and 7. Tubes of a larger ſize for throwing liquids through

nrough the ſac into the noſe by an exter-
al opening, when this has either been
nade by an inciſion, or when the ſac has
urſt in conſequence of tears and matter
collecting in it.

Figs. 2. 3. 8. 9. 10. and 11. Tubes of
ifferent forms, which have been employ-
d in the operation for the fiſtula lachry-
nalis, when the paſſage through the os
nguis cannot in any other manner be
ept free and pervious. Of theſe, how-
ver, figs. 3. and 10. are the beſt. The
mall bulge with which they are form-
d, not only prevents them from paſſing
hrough the opening altogether into the
oſe, which cylindrical tubes are apt to
o, but when they are once properly fix-
d, it prevents them from riſing againſt
he ſkin, which they are otherwiſe ready
o do. The tubes here repreſented, are
f ſizes, both as to length and thick-
eſs, which anſwer for the moſt part of
dults; but theſe are circumſtances which
muſt depend upon the nature of every
aſe, and will accordingly be liable to
ſome

ſome variety. Tubes for this purpo ſhould be made of gold poliſhed in th fineſt manner.

Plate XXI.

Fig. 1. A curved ſcalpel, employed b ſome practitioners for extirpating the eye ball. By its form it is ſuppoſed to b well ſuited for this purpoſe; but the com mon ſtraight ſcalpel is by experienc found to anſwer better.

Figures 2. 3. and 4. Curved probes, o a proper ſize for inſerting by the noſtri into the naſal duct of the lachrymal ſac by thoſe who wiſh to clear theſe paſſage in this manner.

Fig. 5. and 6. Probes of a ſmaller ſize for inſerting into the lachrymal puncta.

Plate XXII.

Fig. 1. The knife commonly uſed by Mr Pellier in extracting the cataract It ſhould be highly poliſhed, and ſo ſharp as

is to penetrate the eye with eaſe, at the ſame time that it ſhould be ſufficiently ſtrong for dividing the cornea without yielding. This, as well as the other two knives in this plate, are made to fit the handle repreſented in Plate XXIII. Fig. 1.

Fig. 2. A knife exactly of the ſame form and ſize with the other; only in this, that ſide which paſſes next the iris is round or convex, with a view to protect that membrane from being injured, which it is apt to be when the common flat knife is employed in eyes that are not prominent.

Fig. 3. A probe-pointed knife, which in ſome caſes may be employed with advantage for finiſhing the operation, when by any accident the aqueous humour eſcapes before the point of the other knife has pierced the oppoſite ſide of the cornea: But for a more particular account of the method of uſing it, I muſt refer to Vol. IV. page 330.

Fig.

Fig. 4. Curved ſciſſars of a proper ſize for every operation on the eyes where ſciſſars are needed: Indeed every operator who practiſes much in this branch ſhould have them.

Fig. 5. This is the only ſpeculum which Mr Pellier employs. It may be made of gold or ſilver wire, or of any other metal. It is here repreſented of the full ſize both in length and thickneſs of wire. In uſing it, one of the curves is placed upon the upper eye-lid directly behind the cartilaginous border; and being given to an aſſiſtant, a degree of force is applied with it ſufficient for fixing the eye; which is eaſily done, if the operator at the ſame time makes ſome reſiſtance, by placing the index and middle fingers of one hand on the under edge of the orbit, ſo as to compreſs the eye beneath.

All the inſtruments of this plate are repreſented of the full ſize.

Plate XXIII.

Fig. 1. A knife uſed by Mr Pellier in ome caſes for extracting the cataract. t is fixed in the handle at *B* by a male-crew, fitted to a female ſcrew, which is urned by the nut *A*. This handle may be nade to anſwer figures 4. and 5. as well s every knife employed in operations on he eyes.

Fig. 2. An inſtrument for depreſſing the nder eye-lid. When an aſſiſtant cannot e procured, it may often prove uſeful. he two flat hooks at the upper end of being fixed upon the cartilaginous edge f the eye-lid, the other end of it hang-ng over the cheek by its weight draws conſiderably down.

Fig. 3. An inſtrument for determining ne quantity of ſkin to be removed in ope-ating for the Trichiaſis or Inverſion of ne eye-lids. When it is found neceſſary o remove a portion of ſkin from beneath ne under eye-lid, or from the ſuperior art of the upper palpebra, it may be done ith a common ſcalpel, while an aſſiſtant

ſupports or elevates it from the parts be-
neath either with his fingers alone or wit
forceps made for the purpoſe; but th
inſtrument anſwers better, as by means
it the quantity of parts to be remove
can be aſcertained and cut off with mo
preciſion.

Fig. 4. A knife for opening ſmall co
lections of matter on any part of the ey
ball. Being blunt on the back and rou
on the end, it is uſed without any riſk
injuring the contiguous parts.

Fig. 5. A ſharp-pointed curved knif
for dividing the veſſels of the eye or
the palpebræ.

Theſe inſtruments are all delineated
the full ſize.

Plate XXIV.

Fig. 1. A curved needle fixed in
handle for paſſing ligatures beneath t
pterigium, and other ſmall excreſcenc
ſometimes met with on the external ſurfa
of the eye-lids, and not unfrequently
the eye itſelf. Fig. 1. is intended f
tumo

mors on the right eye, and to be uſed ith the left hand of the ſurgeon. Fig. 4. for the left eye, and to be uſed with e right hand.

Figs 2. and 3. An inſtrument termed a iſtatome, being meant for opening the pſule of the chryſtalline lens. It may be ade of gold or any other metal. In uſing , it is held between the thumb and fore nd middle fingers of the right hand, care eing taken to place the thumb upon the utton *A* or *C*, which is connected with a eath that covers the ſharp point *B*. The and being ſupported upon the cheek by e ring-finger and little finger, the point the inſtrument covered with the ſheath uſt be cautiouſly paſſed through the pu- l till it reaches the lens; when the but- n *C* being drawn back with the thumb, e point of the inſtrument is thus ſet liberty without the hand being moved. his is an ingenious invention, and an- vers the purpoſe with eaſe and ſafety.

Theſe inſtruments are all repreſented f the full ſize.

Plate XXV.

Fig. 1. A ſmall ſcoop, which anſwe better than any other inſtrument for re moving ſmall ſtones, peas, and ſuch lik ſubſtances, from the noſtrils or ears.

Figs. 2, 3, 4, 5, and 6. Are inſtrumen employed by Mr Pellier for the operatio of the Fiſtula Lachrymalis. Fig. 2. is perforator and conductor for clearing th paſſage through the os unguis into th noſe. Figs. 5. and 6. are tubes for le ving in the paſſage. Fig. 3. is a compreſſo for fixing them after they are inſerted and the eaſieſt method of inſerting a tub is by putting it upon the conductor afte it is paſſed through the compreſſor, as repreſented in fig. 4. The conductor, arm ed with the tube and compreſſor, be ing paſſed through the paſſage into th noſe, muſt be withdrawn; when, by mean of the compreſſor, the tube may be firml fixed.

Theſe inſtruments are all repreſente of the full ſize.

Plate XXVI.

The figures in this plate repreſent inſtruments of Mr Wathen's for the cure of the fiſtula lachrymalis.

Figs. 2. and 3. A tube and tent for inſerting into the natural paſſage between the lachrymal ſac and the noſe: Theſe inſtruments may either be of lead, ſilver, or gold: When made of ſilver or gold, it is neceſſary to have one or two turns of a female ſcrew in the top of the cup or cylinder; but not when formed of lead.

Fig. 4. The ſtile of the tube.

Fig. 5. The ſtile of the tent.

The ſtiles are meant to conduct their correſponding tubes and tents into the paſſage. And,

Fig. 1. A ſcrew ſtile for the purpoſe of removing the tubes or tents when neceſſary, for which purpoſe however ſmall forceps anſwer better.

Figs. 6. and 7. A tube and tent with a ſtring fixed to an aperture at the top of each.

Figs. 8. and 9. A tube and tent with a ſtile and ſtring united to each and ready for uſe.

Theſe tubes and tents Mr Wathen obſerves are of the largeſt ſcale: There are two inferior ſcrews; the middlemoſt of which proves moſt generally applicable.

I have thus given a delineation of this part of Mr Wathen's apparatus, with which I doubt not that the fiſtula lachrymalis may be cured; but I conſider it in every part as inferior to what I have delineated in Plate XXV. both for the form of tubes and method of introducing them. For a more particular detail, however, than can be given here of the method of uſing Mr Wathen's apparatus, his book ſhould be conſulted; in which many valuable obſervations will be met with *.

PLATE

* *Vide* A New and Eaſy Method of curing the Fiſtula Lachrymalis; the Second Edition, &c. By Jonathan Wathen Phipps, Surgeon, London.

PLATE XXVII.

Fig. 1. Mr Berenger's knife for the operation of extracting the cataract.

Fig. 3. Baron Wenſel's knife.

Fig. 4. Doctor Richter's knife.

Fig. 2. A ſpeculum oculi, the invention of my friend Dr Wardrop, whoſe experience in diſeaſes of the eyes has been very extenſive.

This ſpeculum will be found very uſeful when the operator cannot have the aid of a good aſſiſtant. In ſcarifying the veſſels of the eye, this inſtrument anſwers the purpoſe of holding back the eye-lids completely, and gives a ſufficient degree of ſteadineſs to the ball of the eye. The inſide of the eye-lids are alſo turned outwards, at the ſame time that they are puſhed backwards, ſo as to expoſe the parts in the moſt complete manner.

The hinge ſhould be made very eaſy, that the operator may have little reſiſtance to overcome, and thus he will be

more ſenſible of the degree of preſſure to be made upon the eye. The other parts muſt be ſo firm as not to yield to any force that may be employed. The points of the forceps are connected with the ſemicircular pieces obliquely, to prevent the hand that holds the inſtrument from obſtructing the light.

Theſe ſemicircular parts ſhould be covered with thin leather that has ſome degree of roughneſs.

In uſing the inſtrument, it ſhould be placed, ſhut upon the eye-lids, and gradually opened as the eye-lids are puſhed backwards; then as much preſſure is to be made as may be found neceſſary.

Fig. 5. Small forceps, uſed by Baron Wenſel, for extracting the capſule of the lens, when in the operation of extracting the cataract it is found to be opake.

Plates XXVIII. & XXIX.

The figures in theſe plates form a very ſeful part of the apparatus of an oculiſt. t is employed by Mr Biſchoff*.

All the figures of Plate XXVIII. reſent a chair on which the patient is laced during the operation of extracting e cataract, by which his head is kept uch more fixed and ſteady, than it can oſſibly be in the uſual way, ſupported on e breaſt of an aſſiſtant; and as ſteadieſs is of the greateſt importance in all perations on the eye, the uſe of this hair may be extended to many others.

Figs. 1. and 2. Repreſent a ſtrong made hair, to which is faſtened a back *A*, hich on each ſide by means of a ſcrew , moves backwards and forwards. In e top *D*, which can at *C*, if neceſſary, e turned back, is a concave cloth cuſhion

* For a more particular account of this apparatus, ſee Treatiſe on the Extraction of the Cataract, by Frerick Biſchoff, F. M. S. Oculiſt to his Majeſty in the lectorate of Hanover, and to her Majeſty in England.

ſhion for the greater ſecurity of the head, and to prevent it from ſlipping: Being made of a height to admit of the operator ſtanding, there are different pieces of wood, Plate XXIX. fig. 1. to put under the cuſhion, fig. 2.; each of theſe pieces of wood have two pegs *E F*, which fit correſponding holes in the ſeat of the chair: The cuſhion, fig. 2. Plate XXIX. is made in a wooden frame, to which is fixed two projecting pieces of iron, which go through the holes *E F* in the chair, fig. 2. Plate XXVIII. and faſten at the back, in the hind part of the chair with an iron peg, fig. 3. *H H.*

In fig. 3. Are two bars *I I*, to ſupport the top: *K* is a ſtand to prevent the top from falling, received into the notches *L*, which enable the operator, by their different diſtances, to incline the moveable top more or leſs backwards, as he may find convenient.

Fig. 1. Plate XXIX. repreſents a very uſeful bandage for different operations on the eyes, particularly for the after treatment

ment of the operation for the cataract. It conſiſts of a double piece of linen *A A*, about three fingers broad, and proportioned in length to the circumference of the head: At each end are fixed two ſtrings *B B* to tie it upon the forehead: To this piece of linen are ſewed two pieces of double, dark-coloured ſilk or linen *C C*, about ſix fingers ſquare, ſo that the piece which covers the diſeaſed eye ſhould be a little under the other piece, that no light may poſſibly reach the eye on which the operation has been performed; while ſome degree of light, if the operator thinks proper, may be admitted to the other.

Fig. 4. is a knife for extracting the cataract, nearly the ſame, although ſomewhat different from Dr Richter's, Plate XXVIII. fig. 4.

Plate XXX.

Fig. 1. Forceps of a convenient form for extracting ſmall bones or other ſubſtances from the throat.

Fig. 2. An inſtrument for preventing the noſtrils from collaſping after the operation deſcribed in Vol. IV. Chap. XII. Sect. IV. *AB*, Two moveable tubes for inſerting into the noſtrils, to be retained in their ſituation by a ribband paſſed through the opening *CD*, and tied on the back part of the head.

Fig. 3. A ſide view of one of the tubes.

Theſe inſtruments are all repreſented of the full ſize. They, as well as ſome others in this volume, are taken from ſome elegant engravings publiſhed by Mr Bambrilla of Vienna.

Fig. 4. A tube for the purpoſe of conveying a waxed ligature through one of the noſtrils into the fauces, when the ligature being drawn out at the mouth, a cuſhion or pad is attached to it, when it is drawn forcibly into the back part of the noſe, for the purpoſe of putting a ſtop to hæmorrhagies from the noſtrils that do not yield in any other manner. See Vol. IV. Chap. XII. Sect. II.

Plate XXXI.

Fig 1. A double canula for fixing ligatures upon polypous excreſcences either in the noſe, throat, ears, or vagina. The ligature may either be of catgut or pliable ſilver-wire.

Fig. 4. Is a canula for the ſame purpoſe, but of a different conſtruction. When the other is uſed, the ligature is tied round the handles of the inſtrument. In this the ligature paſſes through a moveable handle, and is eaſily turned to any degree of tightneſs.

Fig. 2. Is a canula of the ſame kind with the others; but being crooked, it is better calculated for removing polypi deeply ſeated in the throat. The method of uſing theſe inſtruments is deſcribed in different parts of Vol. IV. Chap. XII.

Fig. 3. Is an inſtrument for paſſing a ligature over the uvula. A thread being paſſed through the tubular part of the handle with the probe *A*, a nooſe is then formed

formed on it; and being lodged in the groove on the inſide of the ring, the other end of the thread is paſſed through the two ſmall holes on the outſides of the ring; and thus it is ready for uſe. This is commonly termed the Ring of Hildanus, from the name of its inventor. All theſe inſtruments are repreſented of the full ſize.

Plate XXXII.

Fig. 1. A ſection of the bones of the head, repreſenting a polypus in the throat hanging down behind the velum pendulum palati, with a ligature paſſed over it and fixed at the root of it, with a double canula inſerted through one of the noſtrils.

Fig. 2. This figure is taken from Mr Cheſelden. It repreſents a polypus in the noſe, with part of it paſſing back to the throat, and the reſt into the noſtril, with a ligature inſerted from the noſtril into the throat, in ſuch a manner as to include the

the root of the excreſcence in its doubling. By afterwards twiſting the ends of the ligature, a degree of compreſſion may be applied upon the root of the polypus ſufficient for removing it; but it would not anſwer in every caſe; and as the method with the canula is not only more eaſy but more effectual, the other will never probably be uſed.

Plate XXXIII.

Fig. 1. A polypus of ſuch a ſize that it diſtended the noſtril completely. It was removed with a ligature as is here repreſented. *A*, The extremity of the polypus which appeared without the noſtril. *C*, A probe of ſilver or any other metal, ſplit at the end, in ſuch a manner as to retain a piece of catgut or ſilver-wire; the doubling of which being inſerted into the ſlit, ſhould be puſhed up to the root of the polypus on one ſide, while the tube *B* being paſſed upon the two ends of it, muſt be puſhed up to the root of it on the

the oppoſite ſide, when the ligature may be eaſily drawn to any neceſſary degree of tightneſs.

Fig. 3. A ſlit-curved probe, which may be uſed for the ſame purpoſe, to wit, for applying a ligature to the root of a polypus in tumors ſeated in the throat. By this ſimple invention a ligature may be carried to the root of almoſt every polypus that can occur.

Plate XXXIV.

Fig. 1. An inſtrument for applying cauſtic to any part of the mouth or throat. It may be made of ſilver or any other metal. *A*, A moveable tube in which the cauſtic is fixed, when by pulling the ring at the other end, it muſt be drawn ſo far into the ſurrounding canula as to be completely covered with it; when the end of the inſtrument being applied upon the part affected, the cauſtic muſt be again puſhed forward to a proper length, which may be always aſcertained with exactneſs by

y means of the ſmall pin tied by a thread
o the ring at the oppoſite end of it.
his, as well as the inſtruments of Plate
XXIII. I am favoured with by Dr
onro, whoſe improvements in ſurgery
e numerous and important.

Fig. 2, 3. and 4. Are different parts of
n inſtrument mentioned in Sect. V.
hap. XII. Vol. IV. for the purpoſe of
atting a ligature round a polypus in the
roat.

Fig. 2. A waxed thread with a nooſe
dapted to the ſize of the groove in the
ng *CD*, fig. 3. *ED*, *EC*, Two tubular
ieces of braſs two inches and a half long,
pporting the ring which is placed hori-
ontally upon them. At the upper ends
f each they ſhould be made perfectly
nooth and round, ſo as to allow the
read to ſlide more eaſily, and to prevent
from being cut by the edges of the
bes. *C D*, The apertures where the ends
f the thread are inſerted. *E*, One of the
penings at which they are brought out.
he other opening cannot be ſeen in this

view of the inſtrument. The handle of the inſtrument is of ſtrong wire, ſeven or eight inches long, and bent a little that it may be the more eaſily introduced.

Fig. 4. An inſtrument for making a ſecond nooſe. *F*, Two braſs wheels fixed in a ſmall caſe of braſs. The two wheels are five-eighths of an inch broad, and half an inch deep. After forming a second nooſe, the ends of the thread ſhould be paſſed over the wheels in the manner here repreſented, when the handle of the inſtrument being puſhed upwards, a knot may be formed of any degree of tightneſs.

This inſtrument is evidently formed upon the ſame principle with the ring of Hildanus, Plate XXXI. fig. 3. and was the invention I believe of the late ingenious Mr Dallas, ſurgeon in Muſsleburgh.

Plate XXXV.

Fig. 1. Curved forceps for extracting polypi from the throat, and from behind the velum pendulum palati.

Fig.

Fig. 2. Straight forceps for extracting olypi from the noſtrils.

Fig. 3. Forceps for the ſame purpoſe ith the laſt, but ſomewhat different in rm. The method of uſing both theſe nd the others, is deſcribed in Sect. V. hap. XII. Vol. IV.

Plate XXXVI.

Figs. 1, 2. and 3. Different forms of urved ſciſſars, for extirpating tumors ithin the mouth, as well as for other urpoſes.

Fig. 4. An inſtrument nearly of the rm of a fleme, which anſwers better an any other for ſcarifying the gums f children in dentition.

Plate XXXVII.

Fig. 1. A ſcarificator for ſeparating he gums from the roots of teeth intend- d to be extracted: It ſhould be very arp, but at the ſame time not ſo fine in

the point or edge as to be hurt by being inſinuated between the gums and the teeth.

Fig. 2. A curved trocar for perforating the antrum maxillare.

Figs. 3. and 4. Two diſſecting hooks with two and three prongs, which anſwer better for many purpoſes than the ſingle pronged hook in common uſe.

Plate XXXVIII.

Fig. 1. An inſtrument for paſſing a ligature round the uvula or any other pendulous excreſcence in the throat; but although the propoſal is ingenious, it does not anſwer the purpoſe ſo well as the inſtruments delineated in Plate XXXI. figs. 1, 2, 3, and 4.

Fig. 2. An inſtrument firſt propoſed by Mr Cheſſelden for tying a knot upon ſchirrous amygdalæ after paſſing a ligature through the baſis of the tumor, in the manner repreſented in fig. 3. The pin in fig. 2. is meant to repreſent a part upon which a knot is to be formed.

Plate XXXIX.

Fig. 1. An inſtrument for removing the uvula by exciſion. That part of the uvula intended to be removed being paſſed through the opening in the body of the inſtrument, the cutting ſlider, which ought to be very ſharp, muſt be preſſed forward with ſufficient firmneſs for dividing it from the parts above.

Fig. 3. A curved probe-pointed biſtoury for removing ſmall tumors in the throat or any part of the mouth: And fig. 2. forceps for laying hold of tumors intended to be removed in this manner.

Plate XL.

Figs. 1. and 2. Two ſcarificators of different forms for opening abſceſſes in the throat, and for ſcarifying the amygdalæ. The two wings with which the uvula of fig. 1. is furniſhed, are intended for compreſſing the tongue, while the point of the inſtrument is paſſed more deeply into the throat.

Figs.

Figs. 2. and 4. Mr Mudge's machine for conveying ſteams of warm water and other liquids to the throat and breaſt. Fig. 2. The inhaler as it appears when fitted for uſe, except that the grating *A*, which then ought to cover the hole, is now turned back, to ſhow the opening into the valve. Fig. 4. A ſection of the cover, in which is ſhown the conſtruction of the cork-valve *B*, and alſo the conical part *C*, into which the flexible tube *D* is fixed.

When the inhaler, which holds about a pint, after being three parts filled with hot water, is fixed at the arm-pit under the bed-cloaths, the end of the tube *E* is to be applied to the mouth; the air, in the act of inſpiration, then ruſhes into the apertures *F*, and paſſing through the hollow handle, and afterwards into a hole in the lower part, where it is ſoldered to the body, and therefore cannot be repreſented, it riſes through the hot water, and is received into the lungs, impregnated with vapour. In expiration, the contents

ontents of the lungs are diſcharged up-
n the ſurface of the water; and inſtead
f forcing the water back through the
ollow handle, the air eſcapes by lifting
he round light cork valve *B*, ſo as to ſet-
e upon the ſurface of the body under the
ed-cloaths.

Thus the whole act of reſpiration is
erformed, without removing the inſtru-
ent from the mouth.

The flexible part of the tube *D* is a-
out ſix inches long, fitted with a wooden
outh-piece *E* at one end, and a part *G*
f the ſame materials at the other, to be
eceived into the cone *C* on the cover.
his flexible tube is made by winding a
ng ſlip of ſilk oil-ſkin over a ſpiral braſs-
ire. This ſhould be then covered with
ne of the ſame ſize, of thin ſilk, and
oth ſecured by ſtrong ſewing ſilk wound
pirally round them. Some length and
egree of flexibility is neceſſary to this
ube, for the ſake of a convenient ac-
ommodation to the mouth when the head
s laid on the pillow.

Care

Care ſhould be taken by the workman, that the cover is made to fit very exactly; or, if it does not do ſo, the defect ſhould be remedied by winding a piece of cotton-wick, or ſome ſuch contrivance, round the rim underneath the cover, ſo as to make it air-tight. The cork, likewiſe, which forms the valve, ſhould, for the ſame reaſon, be made as round as poſſible. It is alſo neceſſary to remark, that the area of the holes on the upper part of the handle taken together; the ſize of the hole in the lower part of the handle which opens into the inhaler; the opening of the conical valve itſelf; and that in the mouth-piece; as well as the cavity or inſide of the flexible tube, ſhould be all equally large, and of ſuch dimenſions, as to equal the ſize of both noſtrils taken together; in ſhort, they ſhould be ſeverally ſo large, as not only to obſtruct each other, but that reſpiration may be performed through them with no more labour than is exerted in ordinary breathing.

PLATE XII.

Fig. 1.

Fig. 2.

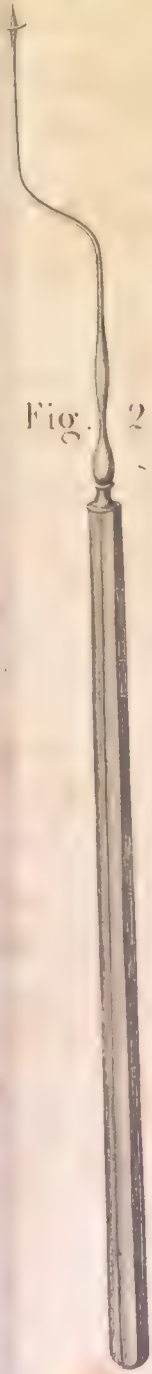


Fig. 3.

Fig. 4.

PLATE XIII.

Fig. 1.

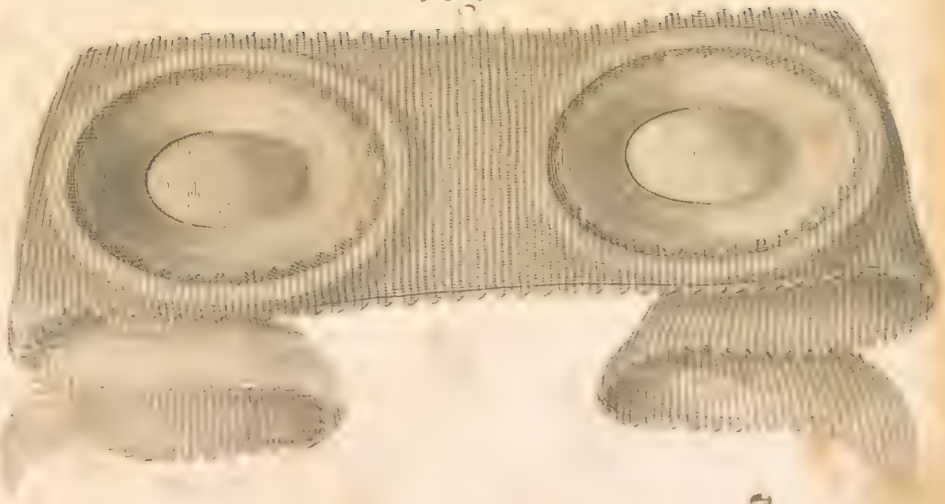


Fig. 4.

Fig. 2.

Fig. 3.

Fig. 5.

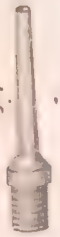


Fig. 6.

D. Lazar. Sculp.

PLATE XIV.

Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

PLATE XV.

Fig. 1.

Fig. 2.

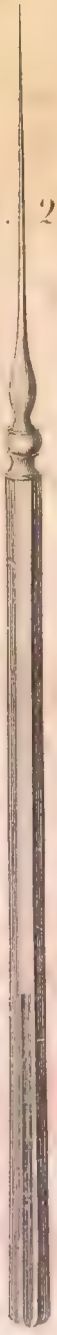


Fig. 3.

Fig. 4.

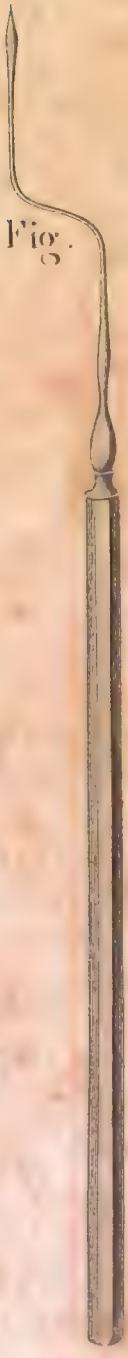


Fig. 5.

PLATE XVI.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

PLATE XVII.

Fig. 1.

Fig. 2.

Fig. 3.

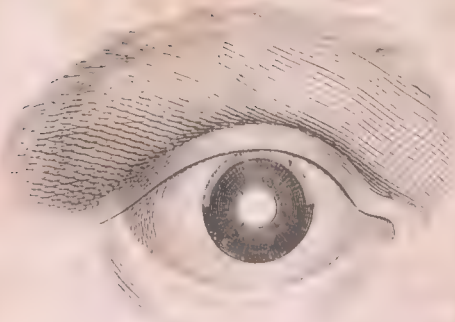


Fig. 4.

Blazers Sculp

PLATE XVIII.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

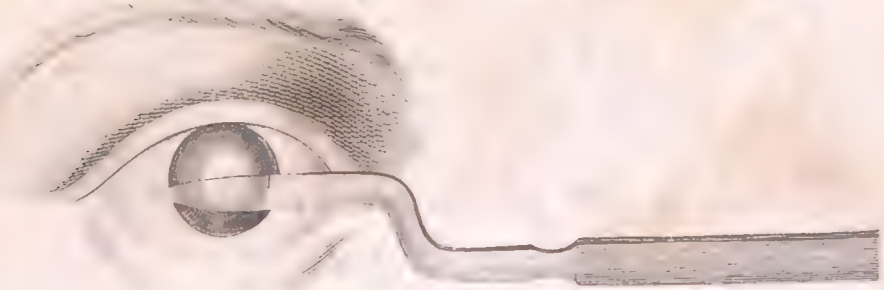


PLATE XIX.

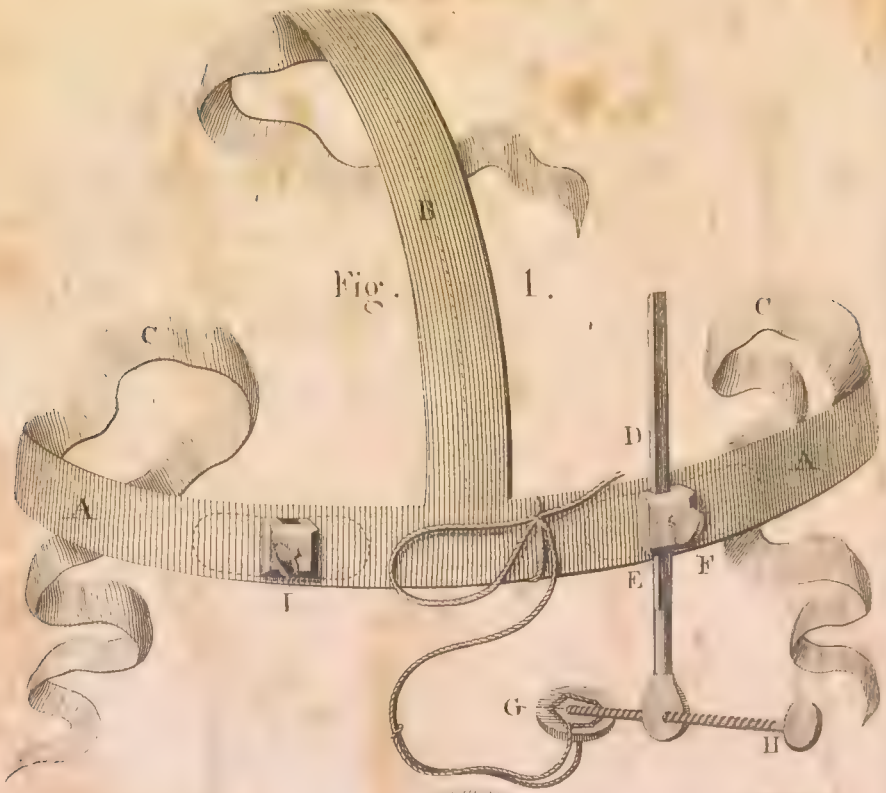


Fig. 1.

Fig. 2.

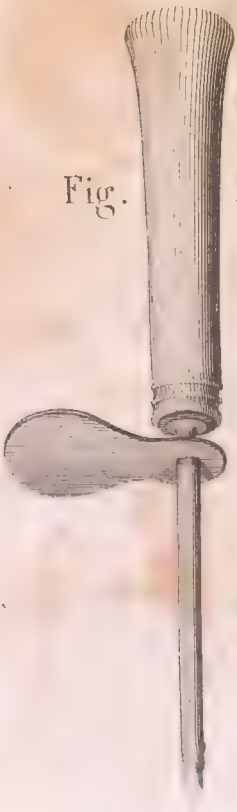


Fig. 3.

Fig. 5.

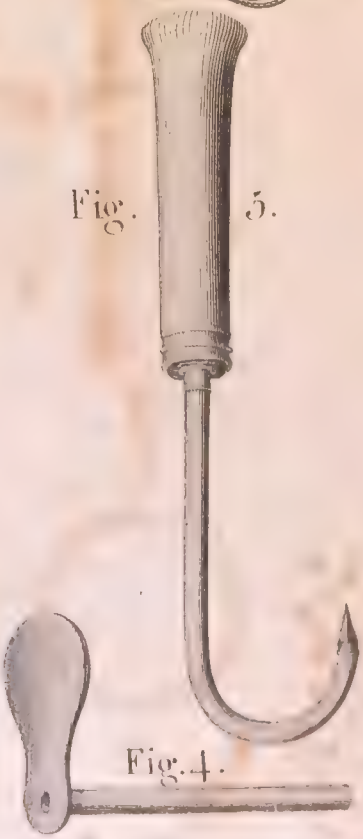


Fig. 4.

PLATE XX.

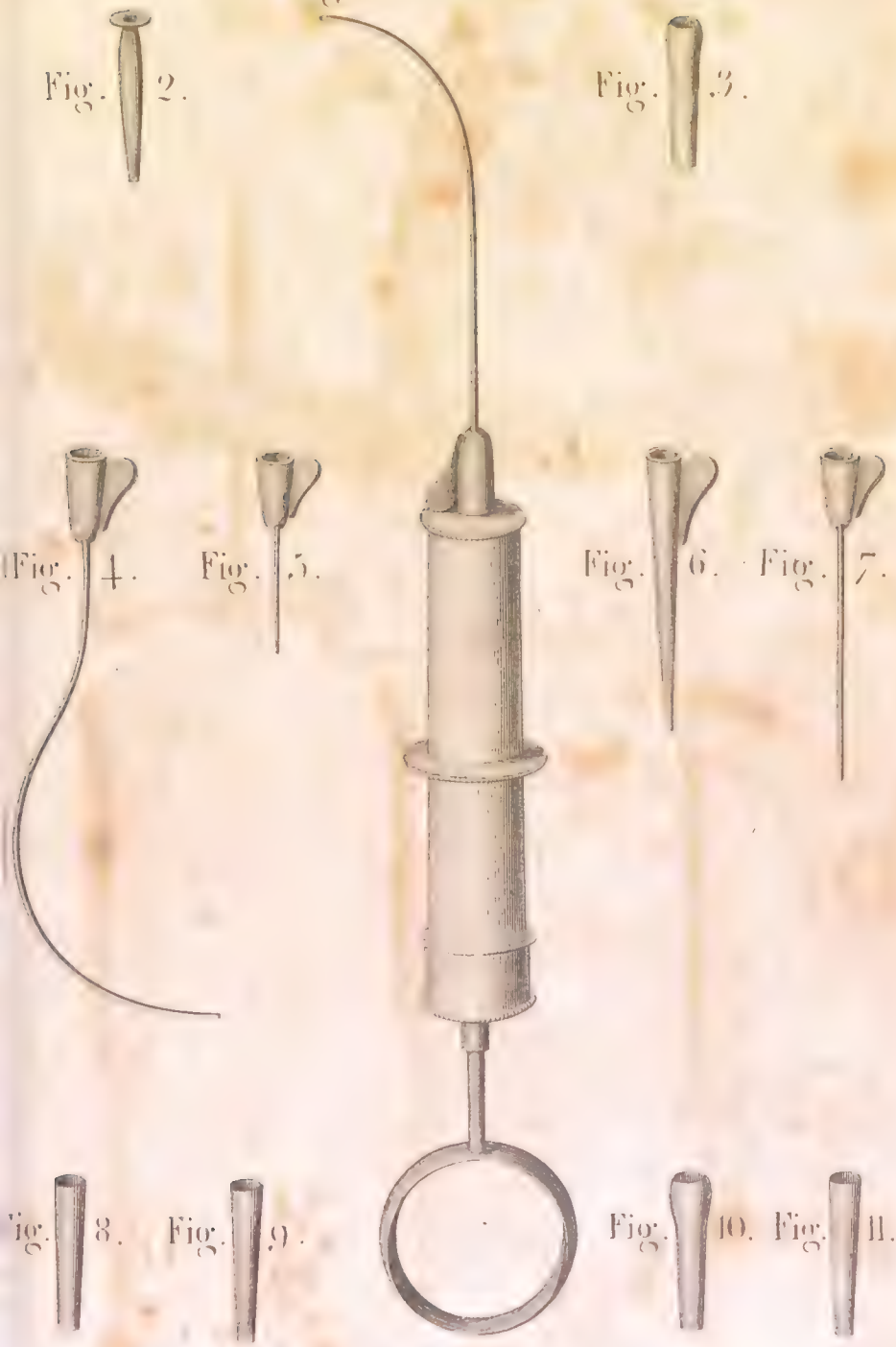
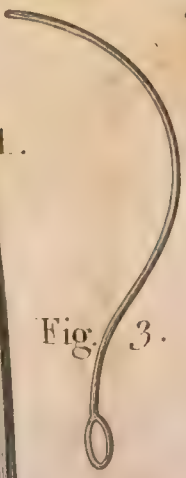


PLATE XXI.

Fig. 2.

Fig. 1.



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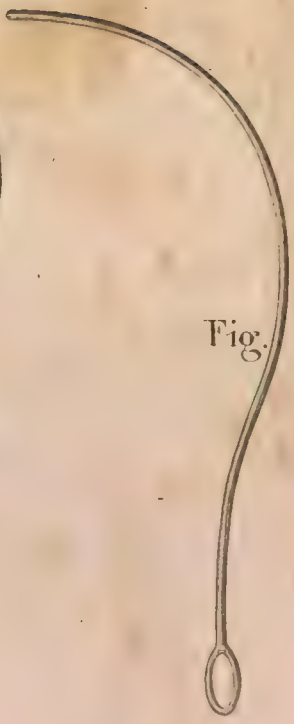


Fig. 4.

Fig. 5.

Fig. 6.

PLATE XXII.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

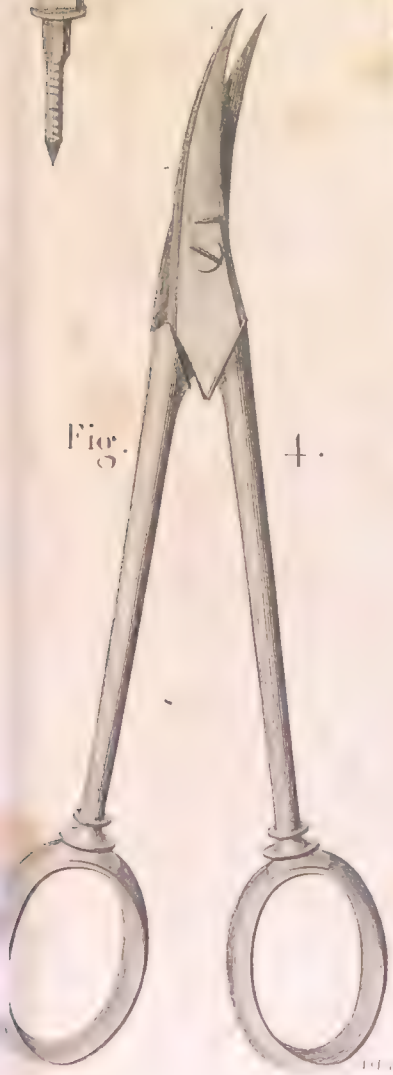


Fig. 5.

PLATE XXIII.

Fig. 1.

Fig. 2.

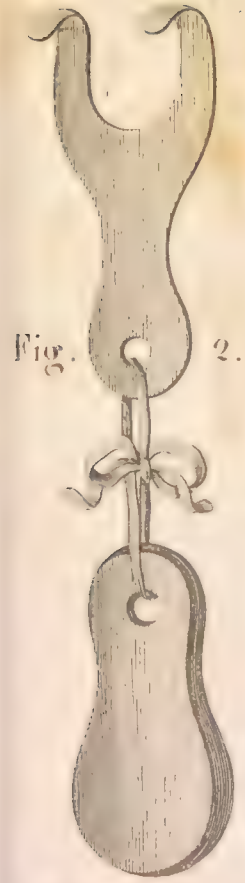


Fig. 3.

Fig. 4.

Fig. 5.

PLATE XXIV.

Fig. 1.

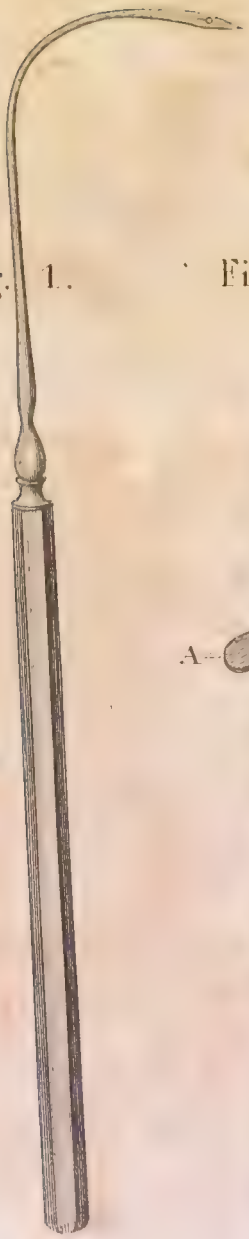


Fig. 2.

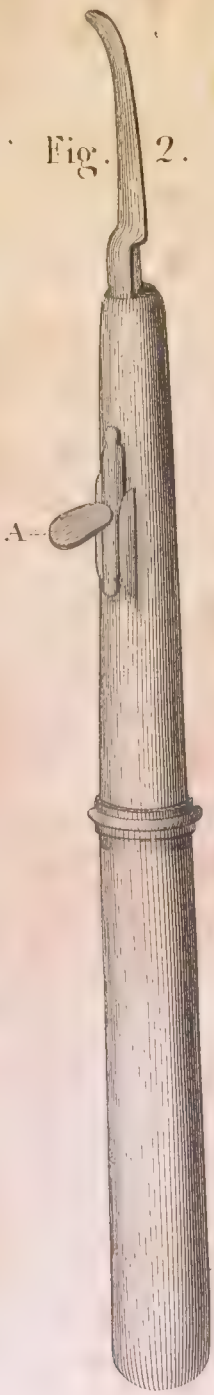


Fig. 3.

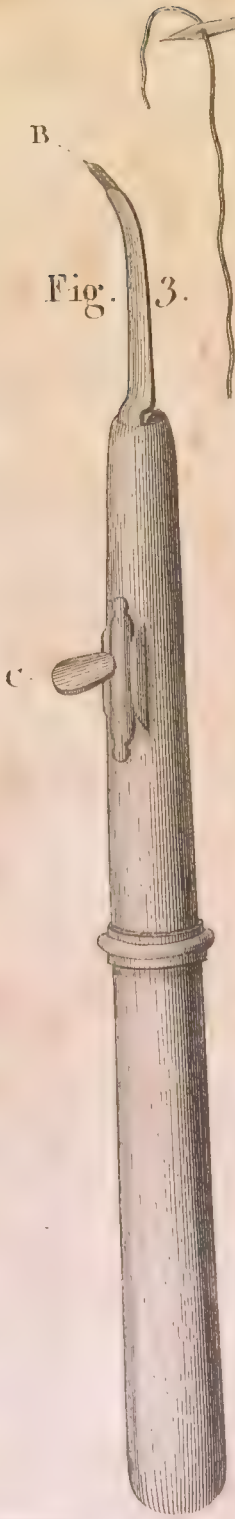


Fig. 4.

PLATE XXV.

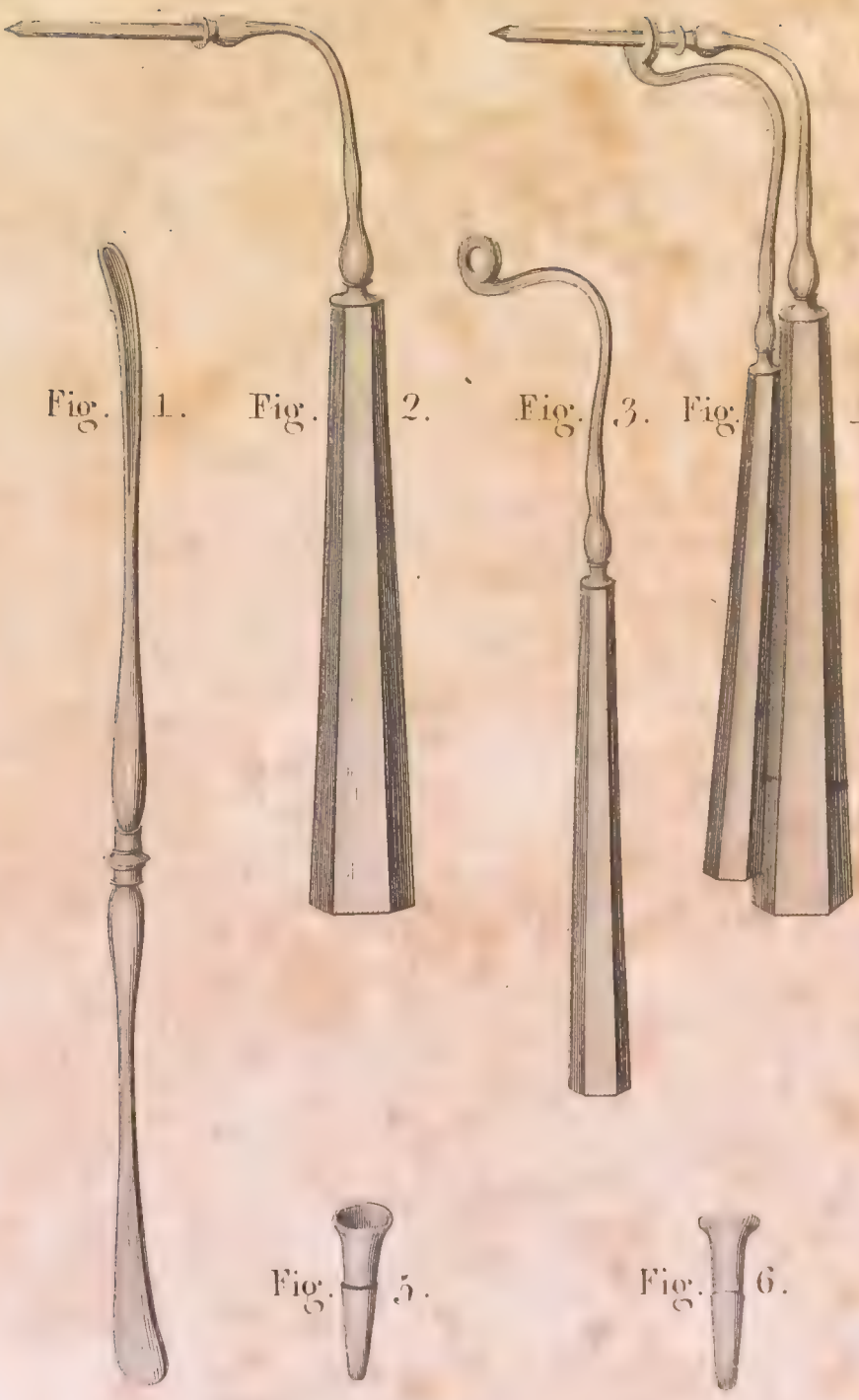


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

PLATE XXVI.

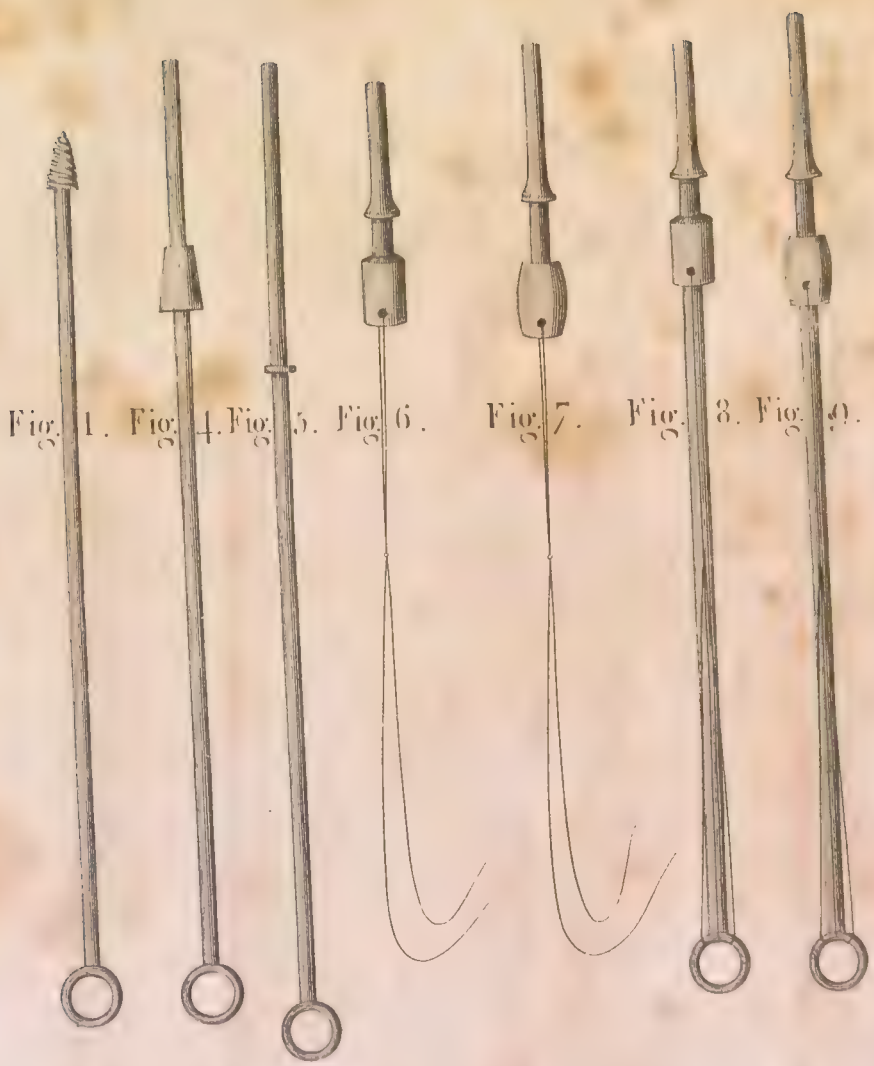


Fig. 1. Fig. 4. Fig. 5. Fig. 6. Fig. 7. Fig. 8. Fig. 9.

Fig. 2.

Fig. 3.

PLATE XXVII.

Fig. 1.

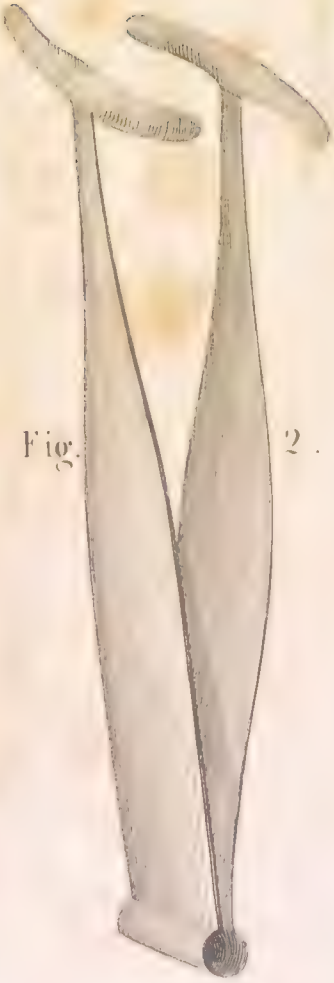


Fig. 2.

Fig. 3.

Fig. 4.

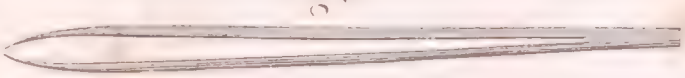


Fig. 5.

PLATE XXVIII.

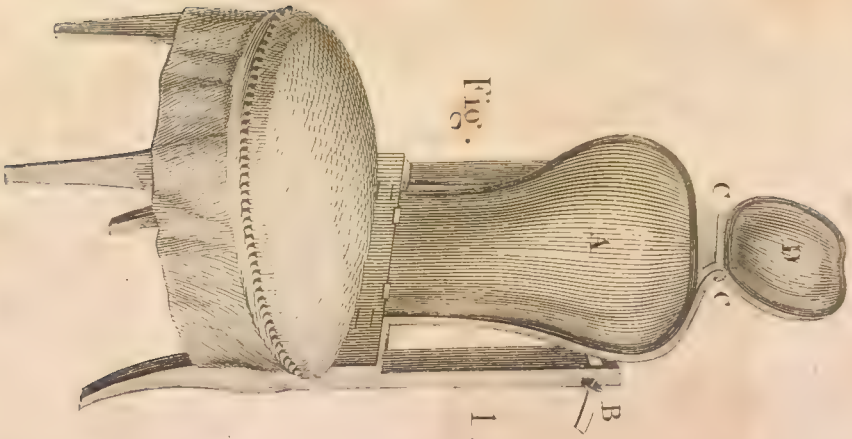


Fig. 1.

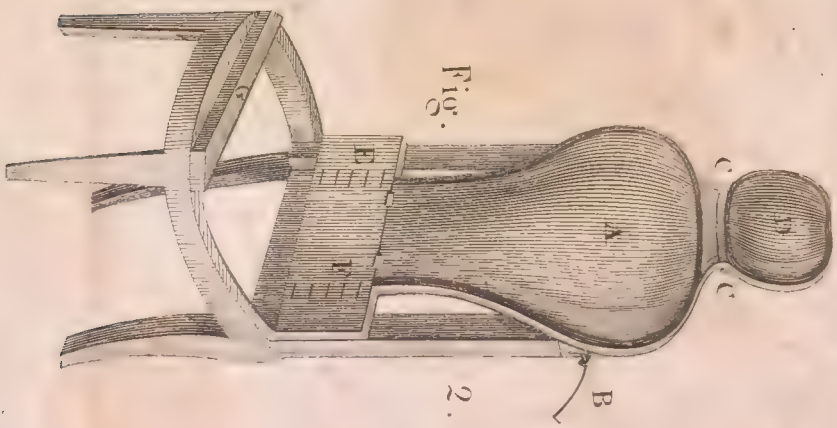


Fig. 2.

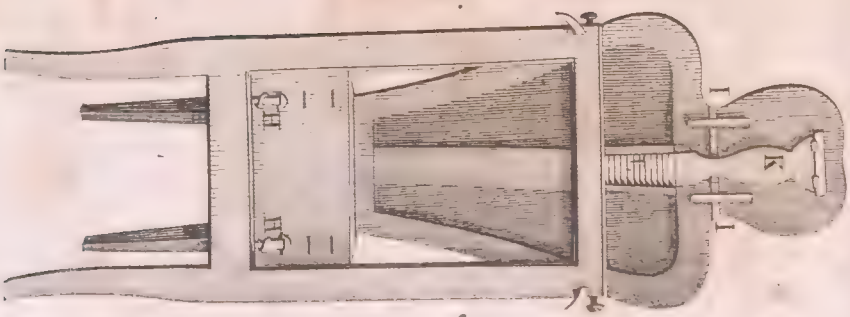


Fig. 3.

Blazes Sculp

PLATE XXIX.

Fig. 3.

Fig. 4.

Fig. 2.

Fig. 1.

Fig. 1.

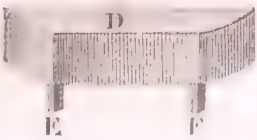


PLATE XXX.

Fig. 2.

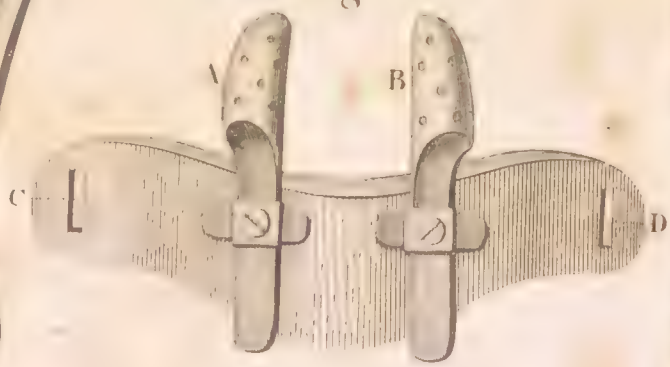


Fig. 1.

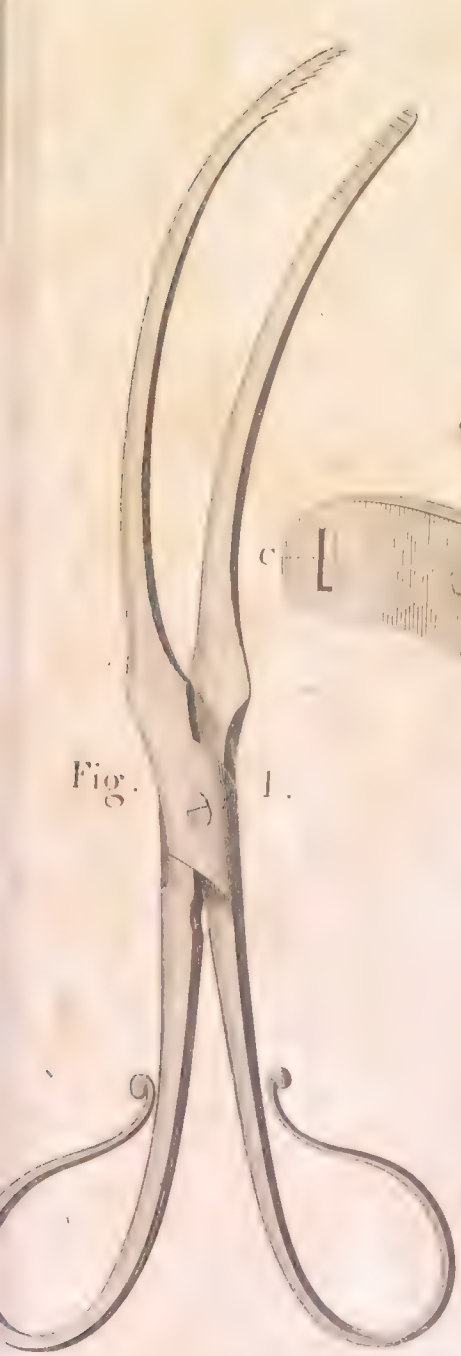


Fig. 4.

Fig. 3.

PLATE XXXI.

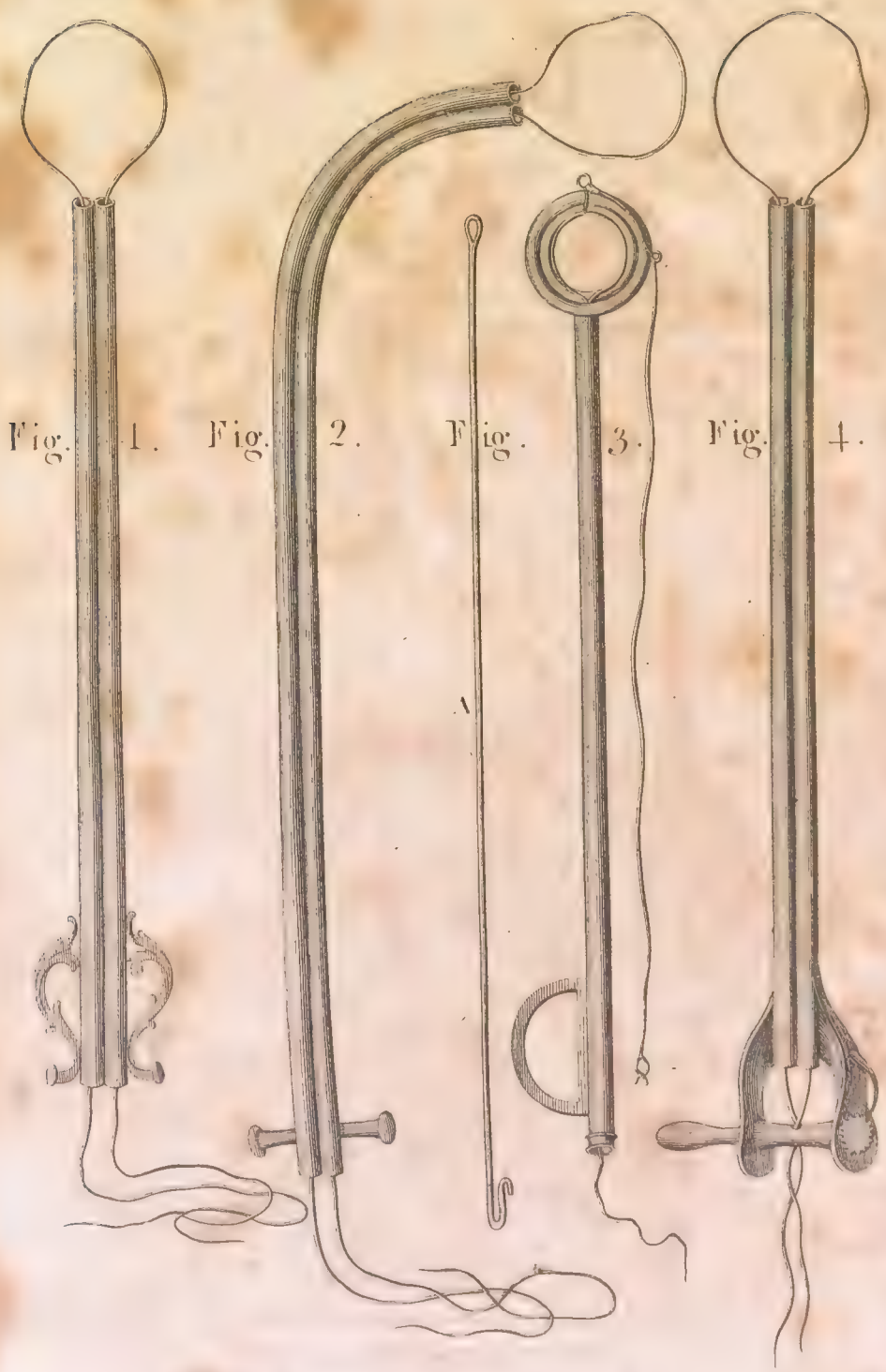


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

PLATE XXXII.

Fig. 1.

Fig. 2.

PLATE XXXIII.

Fig. 1.

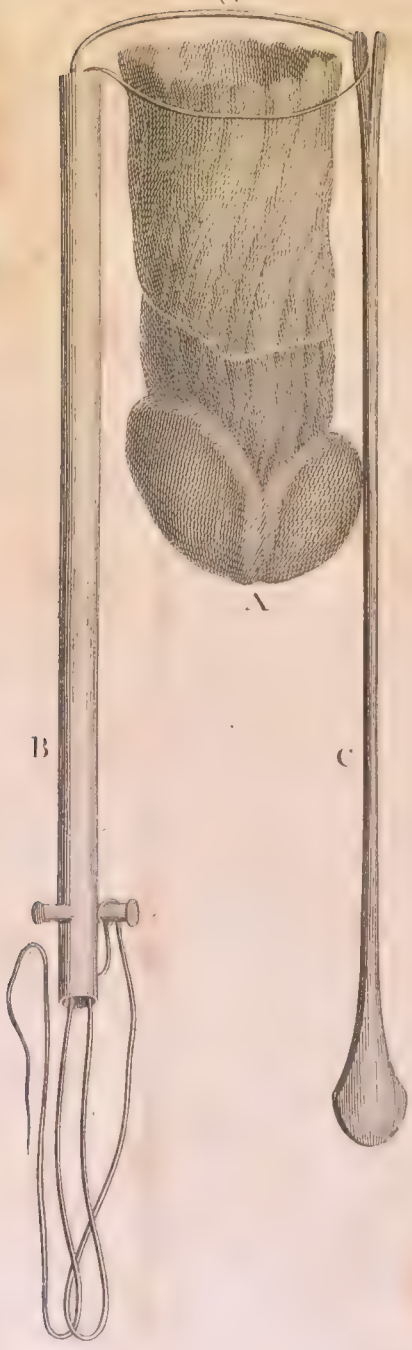


Fig. 2.

Fig. 3.

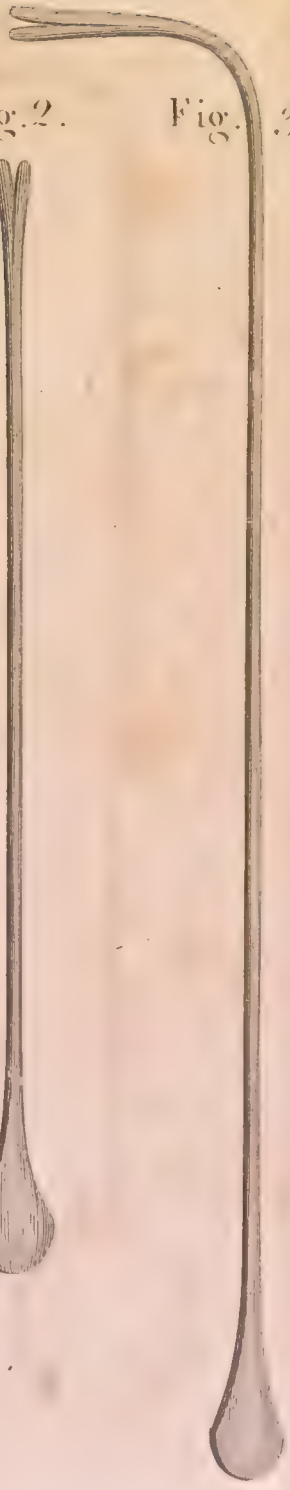


PLATE XXXV.

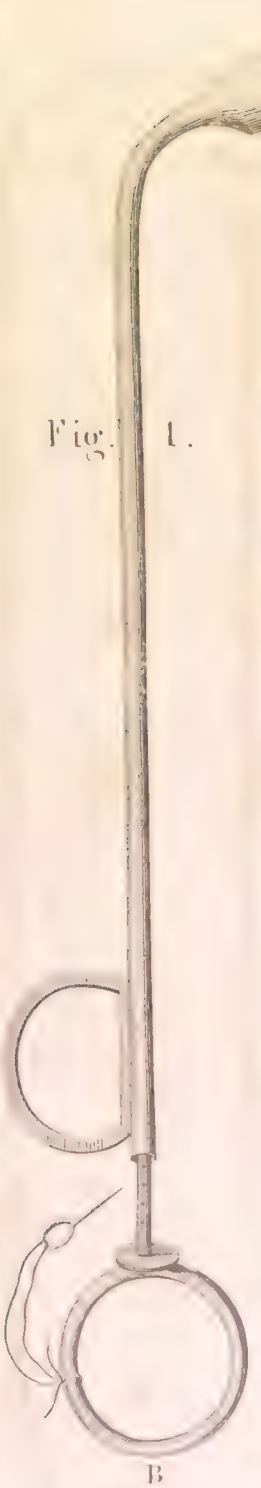
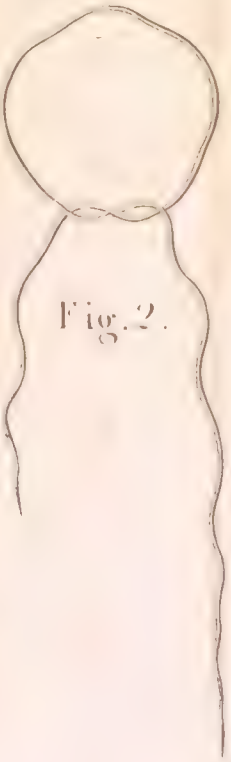


Fig. 1.



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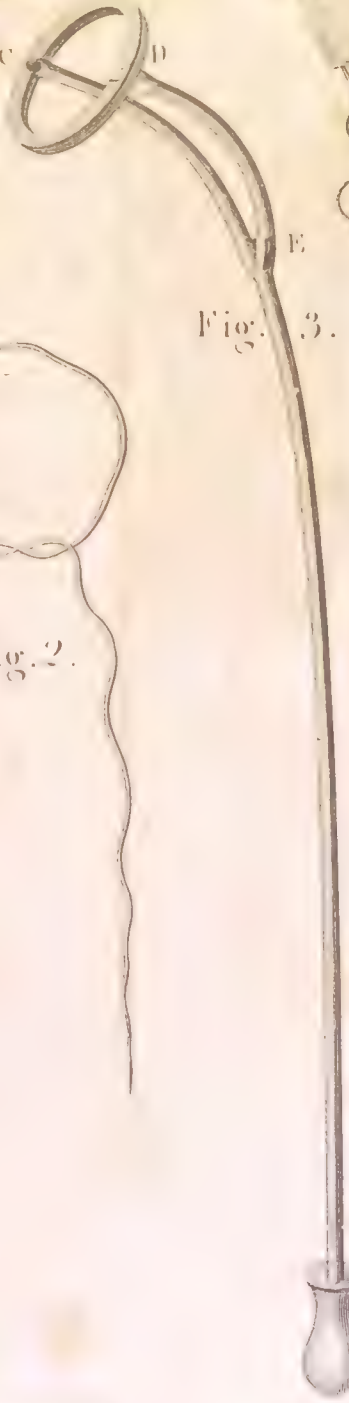


Fig. 3.

Fig. 4.

PLATE XXXV.

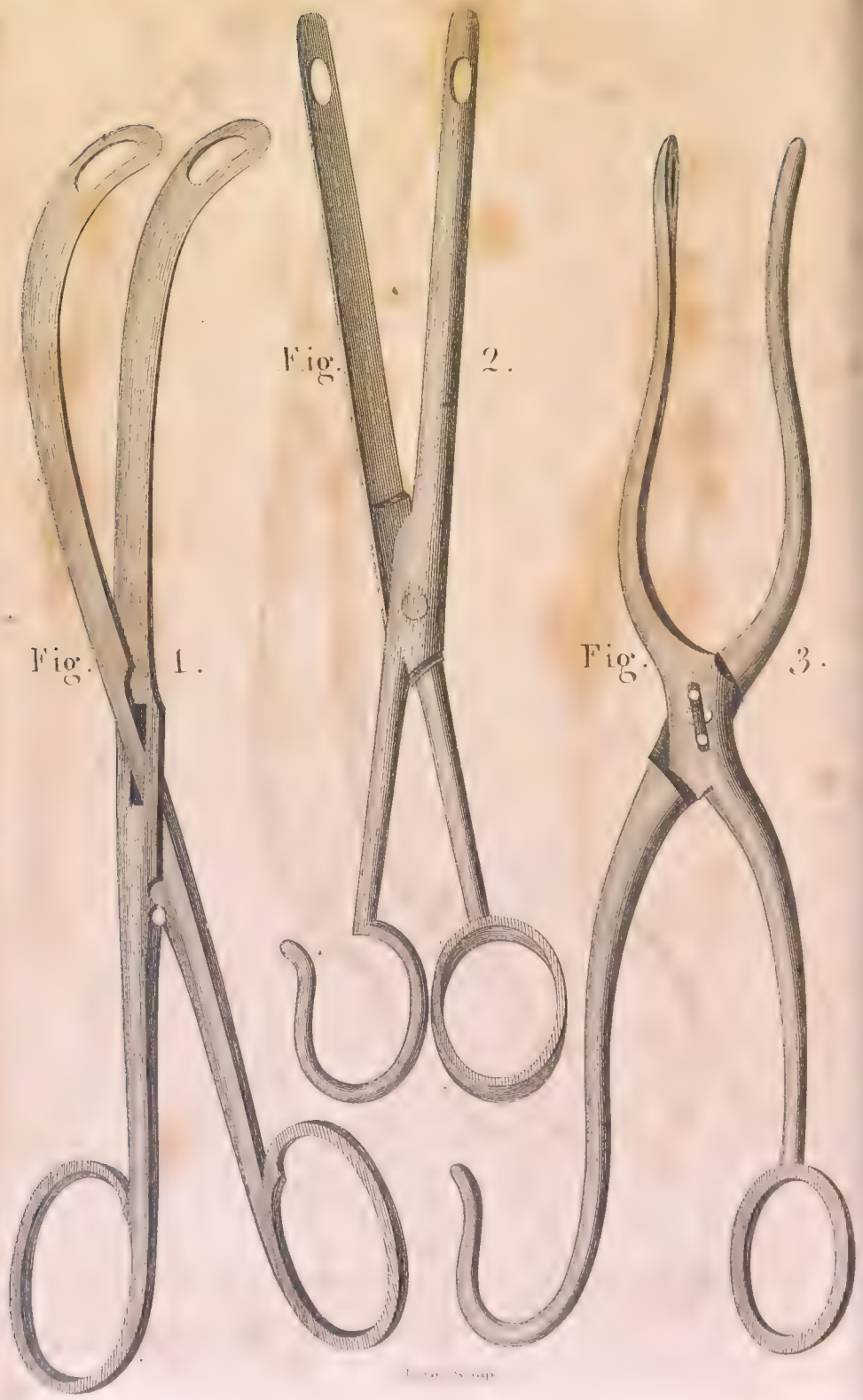


Fig. 1.

Fig. 2.

Fig. 3.

PLATE XXXVI.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

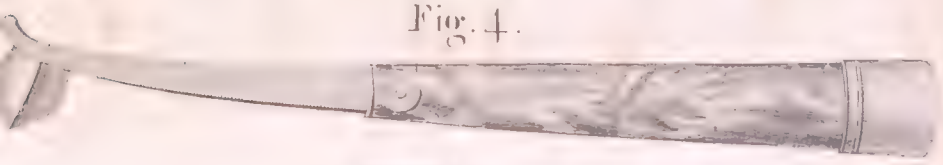


PLATE XXXVII.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

PLATE XXXVIII.

Fig. 1.

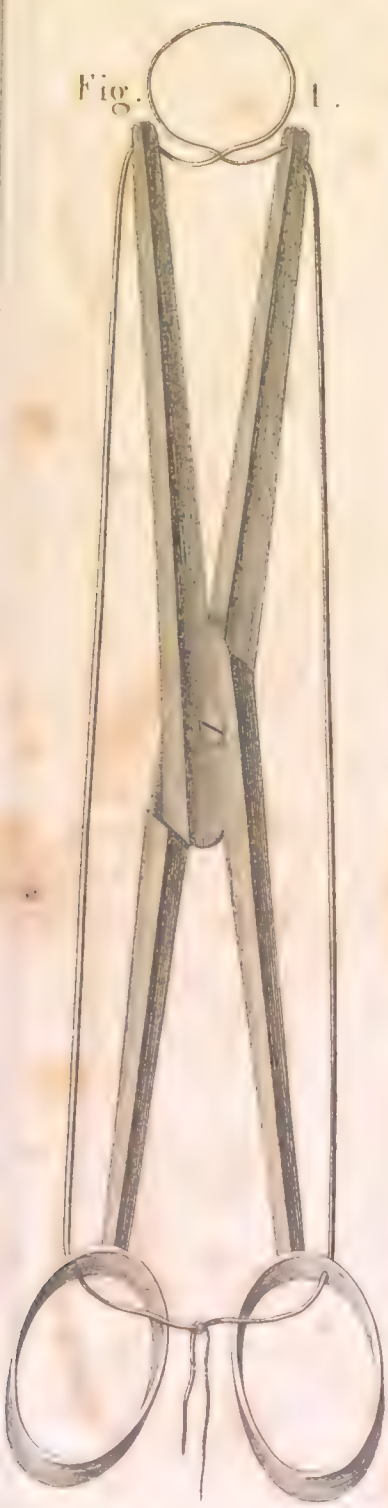


Fig. 2.

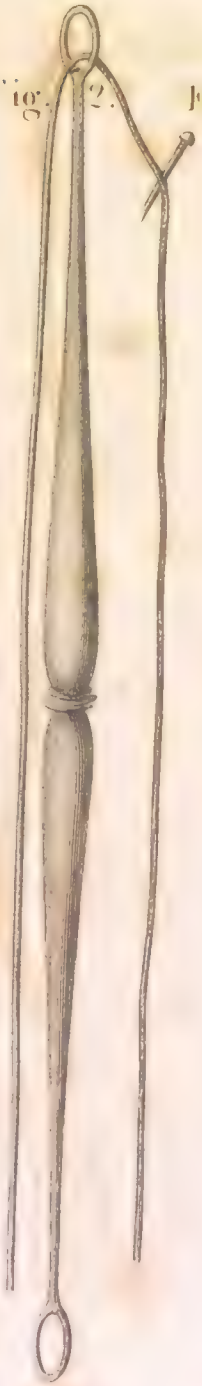


Fig. 3.

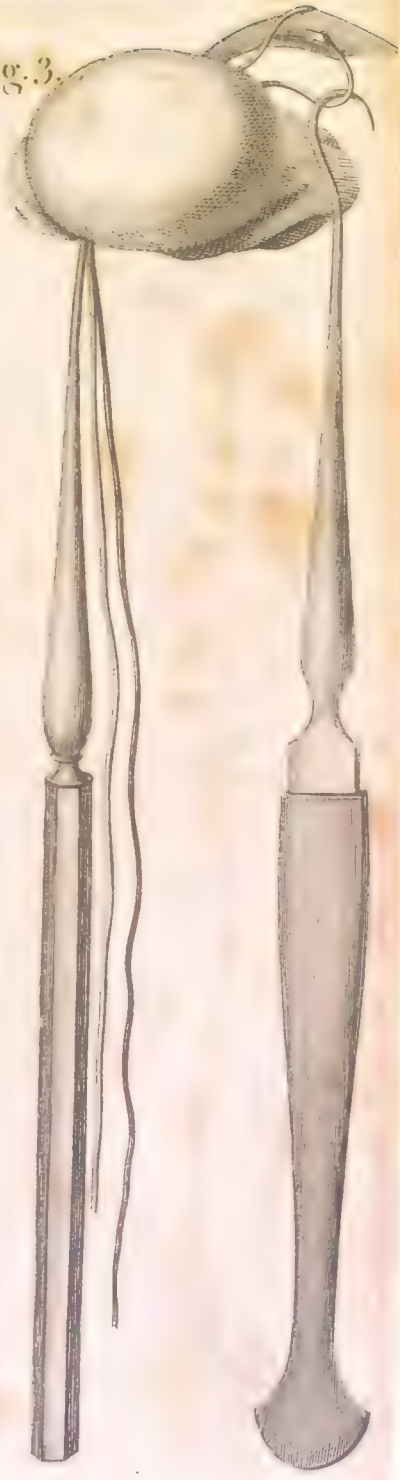


PLATE XXXIX.

Fig. 1.

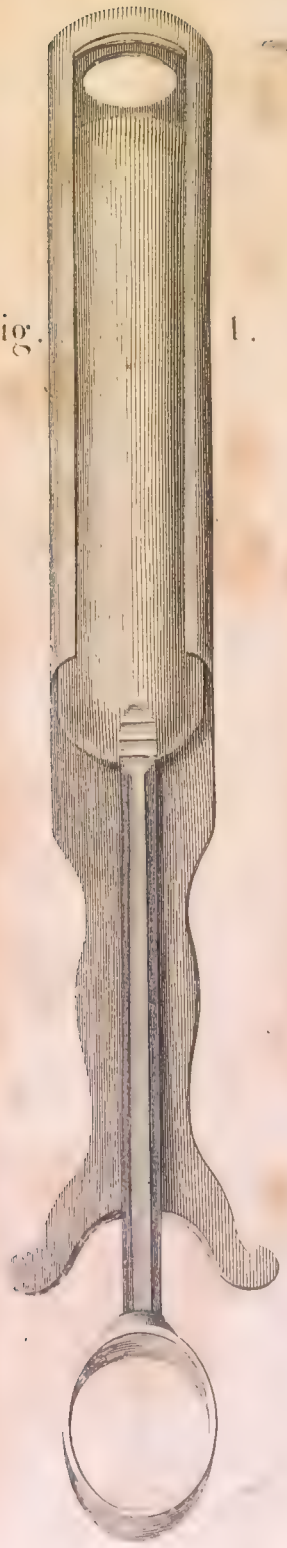
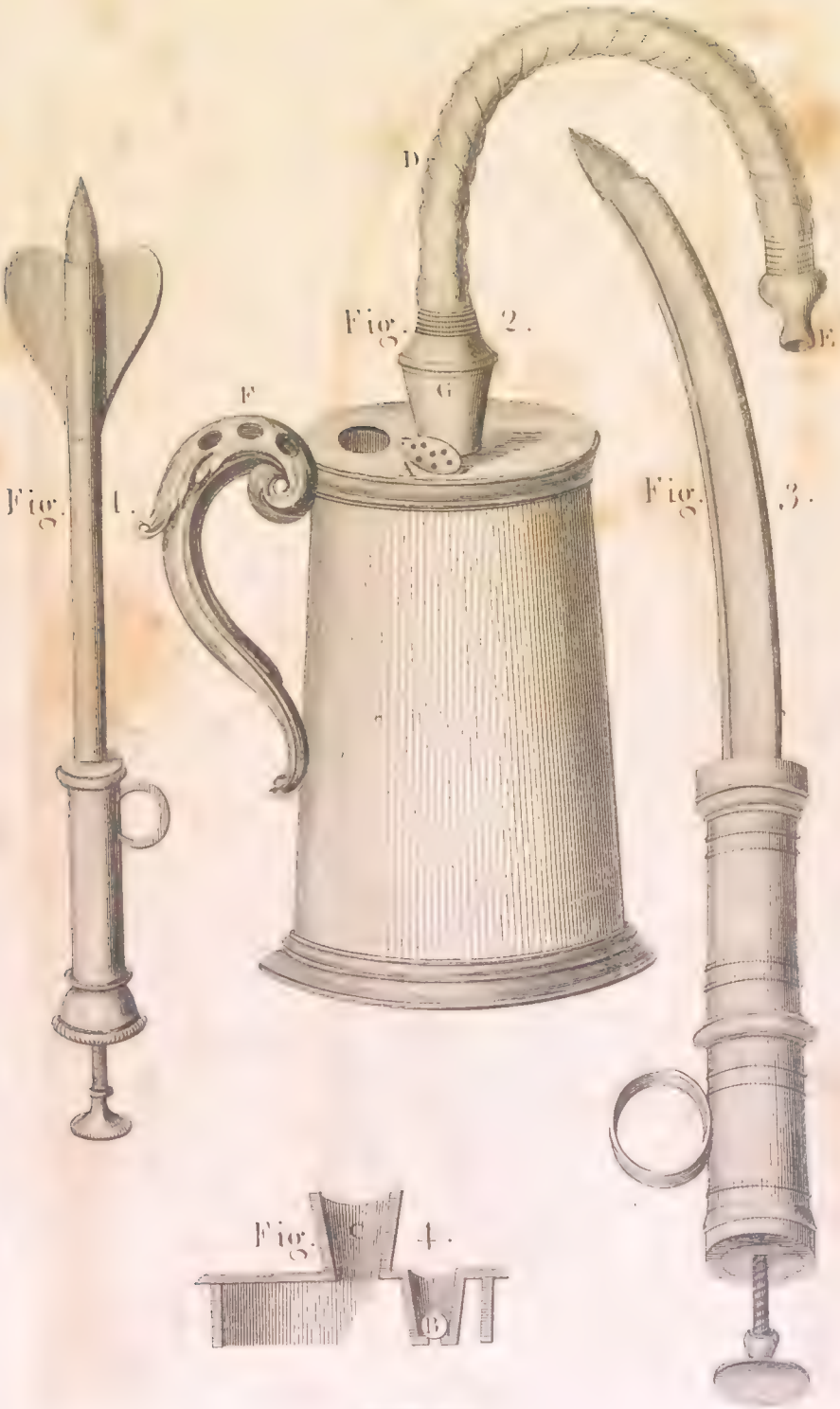
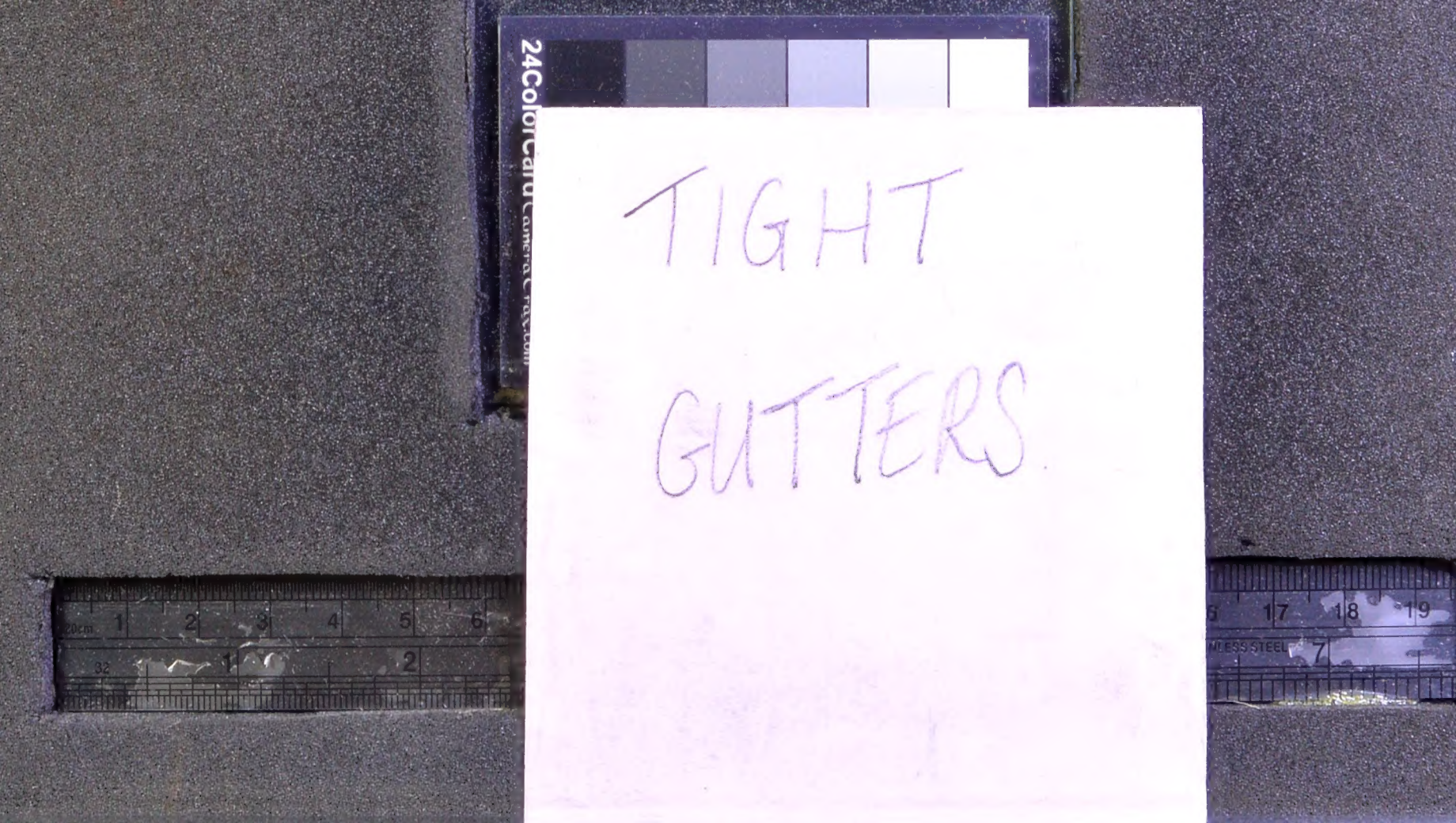


Fig. 2.

Fig. 3.

PLATE XL.




TIGHT
GUTTERS.